University of Alberta

Eliminating Hypothetical Bias in a Physical Activity Context: The Effect of a Corrective Entreaty

by

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A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfillment of the requirements for the degree of Master of Arts

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ABSTRACT

Hypothetical bias is the overestimation of intention in a hypothetical situation and can be eliminated with corrective entreaty script (CE). Hypothetical bias has never been studied in a physical activity context. The purpose of this project was to determine if intentions to attend a fitness class were different in a hypothetical versus real situation, and whether intentions formed in a hypothetical situation better matched behaviour if a CE was administered. Participants (N=168) were randomized into 3 groups: a) hypothetical (H); b) hypothetical with CE (HE); and c) real (R), and asked their intention and expectation to use a fitness pass. Fitness class attendance was measured subjectively and objectively. More participants in the H group reported a positive intention and expectation to attend a fitness class, with the HE group most closely matching the R group. Better correspondence was found between intention/expectation and behaviour in the HE and R groups.

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Chapter I – Introduction

An abundance of research exists confirming the physiological and psychological health benefits accompanying physical activity (World Health Organization [WHO], 2006). These health benefits include reduced risk of cardiovascular disease, type 2 diabetes, certain cancers, blood pressure, and obesity; reduced symptoms of stress, depression, and feelings of loneliness; and prevention of osteoporosis (WHO, 2006). Current Canadian guidelines (Health Canada, 1998) recommend that every adult accumulate 30 minutes of moderately intense physical activity on most days of the week. Despite these recommendations, 56% of Canadian adults are insufficiently active to achieve optimal health benefits (Canadian Fitness and Lifestyle Research Institute, 2002). Interestingly, when asked about their intentions, the majority of Canadians fully intend to be active in the next 6 months (Canadian Fitness and Lifestyle Research Institute, 2000). Thus, since physical activity intentions do not necessarily result in physical activity behaviour, the relationship between intention and behaviour needs to be better understood.

Several social cognitive theories suggest that intention is the most immediate and important determinant of behaviour. The theories of reasoned action (TRA; Fishbein & Ajzen, 1975), planned behaviour (TPB; Ajzen, 1985, 1991), and protection motivation (PMT; Rogers, 1983) all propose that intention predicts behaviour. In meta-analyses on PMT (Floyd, Prentice-Dunn & Rogers, 2000; Milne, Sheeran & Orbell, 2000), the model accounted fairly well for intention to change behaviour, but its ability to explain subsequent behaviour was limited. In a meta-analysis on the TRA/TPB and physical activity (Hagger, Chatzisarantis & Biddle, 2002), TRA constructs explained 37% of the

variance in intention, and 26% of the variance in behaviour, while TPB constructs accounted for 44% of the variance in intention, and 27% of the variance in behaviour.

Often used interchangeably with intention is a measure of expectation (Courneya & McAuley, 1994; Davis & Warshaw, 1992; Warshaw & Davis, 1985, 1986), even though intention and expectation are defined and formed in different ways (Warshaw & Davis, 1985). Previous research has found expectation to be a better predictor of behaviour that is not under complete volitional control (Sheppard, Hartwick & Warshaw, 1988), such as physical activity (Courneya & McAuley, 1994). Further, Courneya and McAuley (1993) reported expectation to be more strongly correlated with physical activity compared to intention (for a more detailed description of the literature see Appendix A).

The Intention-Behaviour Relationship

In a meta-analysis of 10 meta-analyses on the intention-behaviour relationship, it was reported that intention explains, on average, 28% of the variance in behaviour (Sheeran, 2002). Potential reasons for the discrepancy between intention and behaviour includes unstable intentions (Sheeran, Orbell & Trafimow, 1999) and an inability to act on one's intentions (Tubbs & Ekeberg, 1991). Furthermore, because physical activity is a socially desirable behaviour (Warnecke et al., 1997), intention to perform physical activity is likely over-reported, resulting in an intention-behaviour discrepancy. For instance, Hagger et al. (2002) reported an average correlation of .42 between physical activity intention and behaviour across 60 studies.

A strategy that has proven successful in minimizing the intention-behaviour discrepancy is the formation of an implementation intention, the predecision of when,

where, and how a goal will be pursued (Gollwitzer, 1993). Implementation intentions delegate control of the behaviour onto an environmental cue specified when forming the intention (Gollwitzer, 1993, 1999). This environmental cue stimulates automatic activation of the behaviour when the specified conditions are met (Gollwitzer, 1993, 1999). With equivalent intentions to perform a behaviour, participants who form implementation intentions tend to demonstrate increased probability of behavioural performance compared to controls (Sheeran, 2002).

Implementation intentions have been found to influence behaviours such as: cervical cancer screening (Sheeran & Orbell, 2000), taking vitamin supplements (Sheeran & Orbell, 1999), performing breast self-examinations (Orbell, Hodgkins & Sheeran, 1997), eating healthily (Verplanken & Faes, 1999), resisting alcohol consumption (Murgraff, White & Phillips, 1996), and increasing physical activity (Arbour & Martin Ginis, 2004; Prestwich, Lawton & Conner, 2003). Prestwich et al. found that participants who formed an implementation intention exercised more often and for a greater amount of time over a 4-week period. According to Arbour and Martin Ginis, intentions of sedentary women who formed implementation intentions for performing physical activity over an 8-week period significantly predicted exercising 2 times per week, but not 3 or more times per week. The researchers concluded that implementation intentions may help translate lower level exercise intentions into behaviour.

Although forming an implementation intention has successfully reduced the intention-behaviour discrepancy, several limitations do exist. For instance, forming an implementation intention will not benefit goal achievement if plans are poorly elaborated, if the specified opportunities do not arise or prove unsuitable for initiating specified

responses, or if the specified responses are impossible to execute (Sheeran, Milne, Webb & Gollwitzer, 2005). Also, the effects of implementation intentions will only emerge if goal intention is strong (e.g. Sheeran, Webb & Gollwitzer, 2005), and an implementation intention should not be confused as a substitute for an intervention to promote intentions among people with low motivation to achieve health goals (Sheeran, Milne et al., 2005).

Hypothetical Bias

Along with implementation intentions, research on intentions and the intention-behaviour relationship includes studies of intentions formed in hypothetical situations. An intention formed in a hypothetical situation is often different than an intention formed in a real situation. For example, in willingness-to-pay studies, participants are asked their intention to pay for a public good in both a hypothetical and real situation, and there is often a reported overestimation of intention in the hypothetical situation compared to the real situation (Ajzen, Brown & Carvajal, 2004). This is known as hypothetical bias, an overestimatation in a hypothetical versus a real situation (Brown, Ajzen & Hrubes, 2003). In an effort to better understand hypothetical bias, Cummings, Harrison and Rutström (1995) studied participants' willingness to pay a pre-determined amount for 3 different consumer goods (an electric juicemaker, a calculator, and a box of chocolates). Researchers applied a dichotomous choice approach (yes/no) in both a real and hypothetical situation. For all 3 goods, the proportion of hypothetical *yes* responses was greater than the proportion of real *yes* responses, meaning that more participants who did not have to pay said they would purchase the item, compared to those who actually had to pay.

Several strategies have been implemented in an effort to eliminate hypothetical bias in willingness-to-pay studies, such as asking participants to consider budgetary constraints (Loomis, Brown, Lucero & Peterson, 1996), including the use of real payment bids for comparable goods as a way to calibrate hypothetical bids (Blackburn, Harrison & Rutström, 1994; Fox, Shogren, Hayes & Kliebenstein, 1998), and asking respondents how certain they are that they would actually be willing to pay (Champ, Bishop, Brown & McCollum, 1997; Li & Mattsson, 1995). In their attempt to eliminate hypothetical bias, Cummings and Taylor (1999) administered the "cheap talk" script. This script includes an explicit discussion about what hypothetical bias is, why it might pose a problem, and reasons why it may occur. The script also asks participants to respond in the hypothetical situation as if it were a real situation. In their study, Cummings and Taylor randomized participants into 3 groups (hypothetical, hypothetical with cheap talk, or real) and asked their willingness to donate $10 to a charitable organization. Hypothetical bias was reported, with more *yes* votes from the hypothetical group than from the real group. A similar number of *yes* votes were recorded in the hypothetical with cheap talk group and the real group, with this number being significantly lower than that from the hypothetical group. It was concluded that the cheap talk script was successful in eliciting responses in the hypothetical situation that were indistinguishable from responses in the real situation.

The cheap talk script was also tested in a charity scholarship scenario where participants were randomized into groups and asked to donate $1, $3, $5, or $8 to a scholarship fund for deserving students (Brown et al., 2003). The proportion of *yes* votes was significantly greater in the hypothetical vote compared to the real vote at the $3, $5,

and $8 levels. The cheap talk script was able to successfully eliminate the bias at these higher payment levels.

List (2001) applied the cheap talk script in a baseball card auction where professional card dealers and nondealers were given the opportunity to bid on a baseball card either hypothetically or for real. In the nondealers group, the cheap talk script successfully eliminated hypothetical bias resulting in a mean bid of $26 from the real and hypothetical with cheap talk groups, compared to a mean bid of $49 from the hypothetical group. Interestingly, the cheap talk script was unable to correct for hypothetical bias with the professional dealers, resulting in no significant difference between the hypothetical and hypothetical with cheap talk groups, and finding significantly higher mean bids in both hypothetical situations compared to the real situation. List concluded that the cheap talk script failed to eliminate hypothetical bias with the professional dealers. Brown et al. (2003) questioned whether there may be circumstances where the cheap talk script is unable to effectively correct for hypothetical bias, for instance, when participants are very familiar with the good being bid on.

Corrective Entreaty

In their effort to eliminate hypothetical bias, Ajzen et al. (2004) administered a modified cheap talk script called a corrective entreaty, a script encouraging participants, in a hypothetical situation, to answer in the same manner that they would respond in a real situation. The script also educates participants about what hypothetical bias is and why it may pose a problem (Cummings & Taylor, 1999). Participants were randomized into 3 groups (hypothetical, hypothetical with corrective entreaty, or real) and asked to donate $8 to a scholarship fund for students who could not afford to attend university. In

addition, to understand why the corrective entreaty is effective, Ajzen et al. administered a questionnaire measuring attitude, subjective norm, and perceived behavioural control. Results found that participants in the hypothetical group had a greater intention to vote *yes,* compared to participants in the real group. With regards to behaviour, a significantly higher proportion of participants voted *yes* in the hypothetical situation than in the real situation. However, introduction of the corrective entreaty successfully reduced the proportion of hypothetical *yes* votes, resulting in no significant difference between the real group and the corrective entreaty group. For participants who voted in both the hypothetical and real referendum, 99% voted in accordance with their intentions in the hypothetical vote, while only 80% voted the same way in the hypothetical and real vote.

Ajzen et al. (2004) reported that beliefs, attitudes, and intentions of participants who were exposed to the corrective entreaty in the hypothetical situation were nearly identical to the beliefs, attitudes, and intentions of participants in the real situation. The corrective entreaty lowered beliefs and attitudes regarding a *yes* vote, making them similar to those reported in the real situation (Ajzen et al., 2004). Researchers concluded that hypothetical bias could be explained by an activation of more favourable beliefs and attitudes in the hypothetical situation compared to the real situation. Therefore, for the corrective entreaty to be effective, it must change beliefs by creating attitudes, subjective norms, perceptions of control, and intentions comparable to those formed in the real situation (Ajzen et al., 2004).

Hypothetical Bias and Physical Activity

Along with willingness-to-pay studies, intentions have been measured in hypothetical situations such as: intention to take a hypothetical AIDS vaccination

(Crosby, Holtgrave, Bryant & Frew, 2004), intention to vote on a hypothetical legislation preventing the sale of tobacco to minors (Gottlieb et al., 2003), intention for long-term care for hypothetically injured elderly (McCormick et al., 2002), and paediatricians' intention to administer hypothetical vaccinations (Kahn et al., 2005). These studies were limited because they measured intention only, and did not follow through with measures of behaviour. Without a measure of behaviour, the strength of the intention-behaviour relationship cannot be determined with any certainty. To this researcher's knowledge, intentions have yet to be studied in a hypothetical physical activity context. It can be hypothesized that because physical activity is a socially desirable behaviour (Warnecke et al., 1997), intention to perform physical activity will be over-reported. Although, it is not yet known whether this over-reporting is more evident in a hypothetical or real situation, if hypothetical bias does exist, a corrective entreaty may potentially minimize the bias. A corrective entreaty could be applied in a physical activity setting, for example, when asking participants their intentions, hypothetically, to use a fitness facility or walking trail if it were to be constructed. Based on previous research (Brown et al., 2003; Cummings & Taylor, 1999), intentions to use the facility may be over-estimated. By applying a corrective entreaty, more realistic intentions may be formed, better representing actual behaviour.

The purpose of the present study was to determine whether intentions formed in a hypothetical physical activity situation are different than those formed in a real situation; and whether the intentions of participants who are hypothetically given a free pass to attend a fitness class better matched their behaviour if they were administered a corrective entreaty, than if they were not. Participants were randomized into 3 groups:

hypothetical (H); hypothetical with corrective entreaty (HE); or real (R) and asked their intention and expectation to use a free fitness pass. Fitness class attendance was measured subjectively and objectively 6 and 4-weeks following pre-test assessment respectively.

Hypotheses

H1a: More participants in the H group will have a positive intention to attend a fitness class than participants in the R group. The number of participants with a positive intention in the HE group will be less than the H, and more similar to that of the R group.

H1b: More participants in the H group will have a positive expectation to attend a fitness class than participants in the R group. The number of participants with a positive expectation in the HE group will be less than the H group, and more similar to that of the R group.

H2a: Participants in the H group will show a greater discrepancy between their intention and behaviour than participants in the R group. The discrepancy in the HE group will be most similar to the R group.

H2b: Participants in the H group will show a greater discrepancy between their expectation and behaviour than participants in the R group. The discrepancy in the HE group will be most similar to the R group.

H3: TPB constructs will be more favourable with respect to attending a fitness class in the H group, compared to the HE and R groups.

Delimitations and Limitations

There are several delimitations and limitations in the present study that should be acknowledged. Firstly, 392 participants per group would be required to detect a small-sized association or difference (i.e., less than 10-percentage points) between groups at a power of $b = .8$. This is unrealistic for the present investigation; therefore small-sized associations or differences may go undetected. Secondly, because only undergraduate students are being sampled, results cannot be generalized beyond this population.

Despite these limitations, the formation of intentions and the correspondence between intention and behaviour has yet to be addressed in a hypothetical physical activity context. Thus, it is unknown whether hypothetical bias exists in this context. If hypothetical bias does exist, the usefulness of the corrective entreaty in minimizing this bias outside of willingness-to-pay studies may be beneficial.

Thesis Overview

This thesis is presented in a paper format as outlined by the Faculty of Graduate Studies along with the Faculty of Physical Education and Recreation, University of Alberta. The second chapter is presented as a research paper containing the main study components of the project. The final chapter presents an overall conclusion, implications and limitations of the study, and future research suggestions. Two appendices are presented at the end of the thesis containing: (1) a literature review (Appendix A); and (2) study instruments, an information letter, the corrective entreaty and a de-briefing letter (Appendix B).

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Chapter II – Paper

Running Head: HYPOTHETICAL BIAS AND PHYSICAL ACTIVITY

Eliminating Hypothetical Bias in a Physical Activity Context: The Effect of a Corrective Entreaty Beyond Willingness-to-Pay Studies

The author would like to acknowledge Joy Chikinda, Ian Reade, and Lorian Taylor for their contributions to the study.

Abstract

The purpose of the present study was to determine whether intentions formed in a hypothetical physical activity situation were different than those formed in a real situation; and whether the intentions of participants who were hypothetically given a free pass to attend a fitness class better match their behaviour if they were administered a corrective entreaty, than if they were not. Participants (N =168) were randomized into 3 groups: a) hypothetical (H); b) hypothetical with corrective entreaty (HE); and c) real (R), and asked their intention and expectation to use a free fitness pass. Fitness class attendance was measured objectively and subjectively following pre-test. More participants in the H group reported a positive intention and expectation to attend a fitness class compared to the HE and R groups, with the HE group most closely matching the R group. Significantly better correspondence was found between intention and behaviour and expectation and behaviour in the HE and R groups compared to the H group when behaviour was subjectively measured. Administering the corrective entreaty successfully reduced the hypothetical bias trend and resulted in a better intention-behaviour and expectation-behaviour relationship in a physical activity context.

Eliminating Hypothetical Bias in a Physical Activity Context: The Effect of a Corrective Entreaty Beyond Willingness-to-Pay Studies

Physical activity is a known contributor to health and well being, with an abundance of research confirming its physiological and psychological health benefits (e.g., World Health Organization, 2006). Current Canadian guidelines (Health Canada, 1998) recommend that every adult accumulate 30 minutes of moderately intense physical activity on most days of the week. While the majority of Canadians fully intend to be active in the next 6 months (Canadian Fitness and Lifestyle Research Institute, 2000), 56% of Canadian adults are considered insufficiently active to achieve optimal health benefits (Canadian Fitness and Lifestyle Research Institute, 2002). Since physical activity intentions do not necessarily result in physical activity behaviour, the relationship between intention and behaviour needs to be better understood.

Social cognitive theories such as the theory of reasoned action (TRA; Fishbein & Ajzen, 1975), planned behaviour (TPB; Ajzen, 1985, 1991), and protection motivation (PMT; Rogers, 1983) propose that intention is the most immediate and important determinant of behaviour. However, empirical evidence suggests that this relationship is not as strong as the theories propose. In a meta-analysis of meta-analyses on the intention-behaviour relationship (Sheeran, 2002), intention was found to explain, on average, 28% of the variance in behaviour. The discrepancy between intention and behaviour can result from several factors such as fluctuating motivational levels (Sutton, 1998), or unforeseen personal or environmental factors resulting in an inability to act on one's intentions (Tubbs & Ekeberg, 1991). Furthermore, because physical activity is a socially desirable behaviour (Warnecke et al., 1997), it is likely that intention to perform

physical activity is over-reported, resulting in an intention-behaviour discrepancy. For instance, Hagger, Chatzisarantis and Biddle (2002) found an average correlation of .42 between physical activity intention and behaviour across 60 studies.

The assessment of behavioural intention is often interchanged with the assessment of behavioural expectations (Courneya & McAuley, 1994; Davis & Warshaw, 1992; Warshaw & Davis, 1985), despite the fact that intentions and expectations are formed in different ways (Warshaw & Davis, 1985). Expectation has been found to be good predictor of behaviour because it takes into consideration fluctuations in motivation, and interactions with volitional control factors (Rhodes & Hunt-Matheson, 2005). Expectation has been reported to be more strongly correlated with physical activity than has intention (Courneya & McAuley, 1993).

Intentions and Hypothetical Situations

Previous research on intentions has included studies measuring intentions formed in a hypothetical situation. For example, studies have looked at intentions to take a hypothetical AIDS vaccination (Crosby, Holtgrave, Bryant & Frew, 2004), intention to vote on a hypothetical legislation preventing the sale of tobacco to minors (Gottlieb et al., 2003), intention for long-term care for hypothetically injured elderly (McCormick et al., 2002), and paediatricians' intentions to administer hypothetical vaccinations (Kahn et al., 2005). A concern when measuring intentions in a hypothetical situation is hypothetical bias, the overestimation of an intention in a hypothetical situation compared to a real situation (Ajzen, Brown & Carvajal, 2004). Evidence of hypothetical bias has been reported in willingness-to-pay studies, such as that done by Blumenschein, Johannesson, Blomquist, Liljas and O'Conor (1998) where participants were asked their willingness to

pay $5 for a specific pair of sunglasses in hypothetical and real situations. A significantly greater proportion of participants said they would purchase the sunglasses in the hypothetical situation compared to those who actually had to pay. Similar studies have reported comparable results (Brown, Ajzen & Hrubes, 2003; Champ, Bishop, Brown & McCollum, 1997; Cummings & Taylor, 1999; List, 2001). According to Ajzen et al., hypothetical bias is often evident when studying socially desirable behaviours.

The "cheap talk script" (Cummings & Taylor, 1999) is a strategy that has successfully eliminated hypothetical bias in willingness-to-pay studies. This script describes what hypothetical bias is, why it might pose a problem, and why it might occur. In this script, participants are asked to respond in the hypothetical situation as if it were a real situation. Cummings and Taylor randomized participants into 3 groups (hypothetical, hypothetical with cheap talk, or real) and asked their willingness to donate $10 to a charitable organization. A similar number of *yes* votes was recorded in the hypothetical with cheap talk group and the real group, with this number being significantly lower than the hypothetical group. It was concluded that the cheap talk script successfully elicited responses in the hypothetical situation that were indistinguishable from responses in the real situation. The cheap talk script has been further tested in willingness-to-pay studies and has successfully eliminated hypothetical bias (Brown et al., 2003; List, 2001). Interestingly, the cheap talk script was unsuccessful in correcting for hypothetical bias in a baseball card auction with professional baseball card dealers (List, 2001). Brown et al. questioned whether there may be circumstances where the cheap talk script is unable to effectively eliminate

hypothetical bias, such as situations where participants are very familiar with the good being bid on.

In a more recent study, Ajzen et al. (2004) administered a modified cheap talk script, called a corrective entreaty, a script encouraging participants, in a hypothetical situation, to answer in the same manner that they would respond in a real situation (Cummings & Taylor, 1999). Ajzen et al. randomized participants into 3 groups (hypothetical, hypothetical with corrective entreaty, or real) and asked their willingness to donate $8 to a scholarship for students who could not afford to attend university. As expected, the corrective entreaty successfully eliminated hypothetical bias, resulting in no significant difference between the real group and corrective entreaty group. In addition, the corrective entreaty was found to lower beliefs and attitudes regarding a *yes* vote in the hypothetical situation making them similar to those reported in the real situation (Ajzen et al., 2004). It was concluded that for the corrective entreaty to be effective, it must change beliefs by creating attitudes, subjective norms, perceptions of control, and intentions comparable to those in the real situation (Ajzen et al., 2004).

The relationship between intention and behaviour has yet to be studied in a hypothetical physical activity context. A corrective entreaty could be applied in a physical activity setting, for example, when asking participants their intentions, hypothetically, to use a fitness facility or walking trail if it were to be constructed. Based on previous research (Brown et al., 2003; Cummings & Taylor, 1999), intentions to use the facility may be over-estimated. By using a corrective entreaty, more realistic intentions may be formed, better representing actual behaviour. Though it is unknown whether hypothetical bias applies in a physical activity context, because physical activity

is a socially desirable behaviour, it is likely that people will overestimate their intentions in a hypothetical situation. The purpose of the present study is to determine whether intentions formed in a hypothetical physical activity situation are different than those formed in a real situation; and whether the intentions of participants who are hypothetically given a free pass to attend a fitness class better match their behaviour if they are administered a corrective entreaty, than if they are not. Participating in a fitness class was chosen as the behaviour because it is unique and distinctive, and class attendance was easy to track. The TPB was used as the theoretical basis for the present investigation because of its central focus on the intention-behaviour relationship.

Participants were randomized into 3 groups: hypothetical (H), hypothetical with corrective entreaty (HE), or real (R). It was hypothesized that a greater number of participants in the H group would have a positive intention and positive expectation to attend a fitness class compared to participants in the R group, and the number of participants with a positive intention and positive expectation in the HE group would be most similar to the R group. It was also hypothesized that participants in the H group would show a greater discrepancy (lack of correspondence) between their intention and behaviour, and their expectation and behaviour compared to participants in the R group, and the discrepancy in the HE group would more closely match the R group. The final hypothesis was that the TPB constructs would be most favourable with respect to attending a fitness class in the H group, compared to the HE and R groups.

Method

Participants

Undergraduate students from a large western Canadian University were recruited

and completed the baseline questionnaire (N = 203). Of these 203 participants, 172 completed the follow-up questionnaire. Four participants were excluded from final analysis because of a reported physical disability inhibiting them from participating in physical activity, resulting in a final sample of N = 168 (148 females, 19 males, and 1 unknown). Participants reported a mean age of 21.4 years (SD = 3.53).

Measures

Demographics. Participants were asked to report their age, sex, height, weight, university major, and whether or not they had a physical disability that would inhibit them from taking part in physical activity.

Physical activity. The Godin Leisure Time Exercise Questionnaire (GLTEQ; Godin & Shephard, 1985) was used to measure typical physical activity behaviour. Participants were asked how many times in a typical 7-day period they engaged in strenuous (heart beats rapidly), moderate (not exhausting), and mild (minimal effort) physical activity for a minimum of 15 minutes during their free time. Self-reported frequencies of strenuous, moderate, and mild activities were multiplied by their estimated MET value (9, 5, and 3 respectively), and a total leisure time activity score was calculated by summing the products of the separate items. Cutoffs developed by Garcia Bengoechea, Spence and McGannon (2005) were used to classify participants as active or inactive based on their total leisure time activity score. Specifically, males were classified as active if they had a total score of 38 or greater, and females were classified as active if they had a total score of 35 or greater. The GLTEQ has been found to have acceptable test-retest reliability (r = .74) and validity (Godin & Shephard, 1985).

Beliefs and intentions to attend a fitness class. *Attitude* towards attending a fitness class was measured on a 7-point Likert scale. As suggested by Ajzen (2006), 3 items were used to measure the instrumental aspect of attitude (useless-useful, unimportant-important, and harmful-beneficial) and 3 items were used to measure the affective aspect of attitude (unenjoyable-enjoyable, boring-fun, and painful-pleasurable). The statement, "For me, attending a fitness class is" preceded the above adjectives. Internal consistency of the scale was $\alpha = .79$. *Subjective Norm* was measured using 3 items on a 7-point Likert scale as suggested by Ajzen (2006). Participants were asked, "Most people who are important to me think I should participate in a fitness class over the next month", "Most people who are important to me would encourage me to participate in a fitness class over the next month", and "I think that over the next month, most people who are important to me will themselves attend a fitness class". The third item did not correspond well with the other items ($\alpha = .60$), and was eliminated from further analysis. *Perceived Behavioural Control (PBC)* was measured using 6 items: a) "How controllable would it be for you to attend a fitness class over the next month?", with responses ranging from 1 (extremely uncontrollable) to 7 (extremely controllable); b) "How easy or difficult would it be for you to attend a fitness class over the next month?", with responses ranging from 1 (extremely difficult) to 7 (extremely easy); c) "Do you feel that whether or not you attend a fitness class over the next month would be completely up to you?", with responses ranging from 1 (extremely disagree) to 7 (extremely agree); d) "How confident are you that you could attend a fitness class over the next month?", with responses ranging from 1 (extremely unconfident) to 7 (extremely confident); e) "Do you feel you would have complete control over whether or not you

attend a fitness class over the next month?", with responses ranging from 1 (extremely untrue) to 7 (extremely true); and f) "How certain or uncertain are you that you could attend a fitness class over the next month?", with responses ranging from 1 (extremely uncertain) to 7 (extremely certain). Items were developed based on suggestions made by Ajzen (2006), and previous research done by Courneya (1994). Internal consistency of the scale was $\alpha = .88$. *Intention* to attend a fitness class was measured with a single item. The question was worded slightly differently depending on the group. In the H and HE groups, the question asked, "If you were given a free pass to attend a fitness class at the University of Alberta (e.g., kickboxing, step aerobics, spin cycling), would you intend to use it within the next month?" In the R group the question asked, "Now that you have been given a free pass to attend a fitness class at the University of Alberta (e.g., kickboxing, step aerobics, spin cycling), do you intend to use it within the next month?" Answers were reported in a yes or no format. *Strength of intention* was measured using 3 items: a) "How motivated are you to attend a fitness class over the next month?", with responses ranging from 1 (extremely unmotivated) to 7 (extremely motivated); b) "I strongly intend to do everything I can to attend a fitness class over the next month", with responses ranging from 1 (extremely untrue) to 7 (extremely true); and c) "How committed are you to attending a fitness class over the next month?", with responses ranging from 1 (extremely uncommitted) to 7 (extremely committed). Items were developed based on previous research done by Courneya (1994). Internal consistency of the scale was excellent at $\alpha = .93$. *Expectation* to attend a fitness class was measured with a single item. Similar to intention, the question was worded slightly differently depending on the group. In the H and HE groups the question asked, "If you were given

a free pass to attend a fitness class at the University of Alberta (e.g., kickboxing, step aerobics, spin cycling), do you expect that you would use it within the next month?" In the R group the question asked, "Now that you have been given a free pass to attend a fitness class at the University of Alberta (e.g., kickboxing, step aerobics, spin cycling), do you expect that you will use it within the next month?" This question was answered in a yes or no format.

General exercise intention was measured with a single item. Participants were asked, "How often do you intend to exercise over the next month?" with exercise defined as, "leisure-time physical activity (done during free time) performed for at least 20 -30 minutes in duration, at a moderate intensity (i.e., slight increase in breathing, light sweating). Some examples of moderate exercises are fast walking, baseball, volleyball, and sports such as badminton and alpine skiing". This question was answered in a continuous-open format, where participants were given a blank line to record their response.

Follow-up Questionnaire. This questionnaire included 4 items regarding the use of the free fitness pass: 1) "Have you been regularly attending (i.e. on a weekly basis) fitness classes within the last 6 weeks?"; 2) "Had you been regularly (i.e. on a weekly basis) attending fitness classes prior to receiving your free pass?"; 3) "Have you used the free fitness pass that was provided to you 6 weeks ago?, If not, did you give your pass to a friend to use?"; and 4) "Did your intentions to attend a fitness class change once you were given a free pass?". Questions were answered in a yes or no format.

Post-test Manipulation Check. Participants were asked 6 questions: 1) "Is there anything about this study that you wondered about, or that you were suspicious of?"; 2)

"Do you feel that you were exposed to anything different compared to other people involved in this study?"; 3) "Did anything throughout the study influence your intentions to attend a fitness class?"; 4) "Upon receiving your free pass did you think that your attendance to a fitness class was going to be monitored?"; 5) "Would you have been more likely to use your free pass to attend a fitness class if you knew that your attendance to the class was being monitored?"; and 6) "During the pre-test, specifically when did you find out that you would be receiving a free pass to attend a fitness class?". Questions one through five were answered in a yes or no format. Participants responding *yes* were asked for an open-ended explanation for their response. Question 6 was open-ended.

Procedure

Students were approached in their undergraduate class and asked to participate in a study researching promotional strategies for the Fitness and Lifestyle Centre (FLC; the FLC is the fitness facility located on the university campus). Three different questionnaire packages (H, HE, and R) were randomly distributed throughout the class. To avoid suspicion on the part of the students, all questionnaire packages looked similar. Attached to the back of each questionnaire package was a sealed envelope containing a free fitness pass and a copy of the FLC fitness class schedule. Participants were asked not to open the envelope until instructed to do so.

The H questionnaire package included the demographics questionnaire, the GLTEQ, and the beliefs and intentions to attend a fitness class questionnaire. The HE questionnaire package differed in the way that a written corrective entreaty was included after the GLTEQ, and prior to the beliefs and intentions questions. The R questionnaire package differed in the way that there was a statement saying, "As a thank you for

completing this questionnaire, there is a pass to attend a free fitness class at the University of Alberta (Drop-in Pass), and a fitness class schedule in the envelope attached to the back of this questionnaire package. Please do not open the envelope until you have been instructed to do so" (See Table 1).

INSERT TABLE 1 ABOUT HERE

Once all questionnaire packages were completed, participants were told to open the envelope that was attached to their questionnaire package. Participants were told that the fitness pass was a "thank you" for taking part in the study.

To determine fitness class attendance, all fitness passes were collected from the fitness coordinator one month following pre-test assessment. A number was written on the bottom corner of the fitness pass corresponding with a number on the pre-test questionnaire. Used passes were to be matched with the pre-test questionnaire package in order to determine which participants used their free pass.

Six weeks following pre-test, participants were approached again in their undergraduate class and asked to complete another questionnaire package which included the GLTEQ, the follow-up questionnaire, the general exercise intention question, and the post-test manipulation check. Once all questionnaire packages were completed, participants were debriefed and thanked.

Data Analysis

Descriptive statistics were calculated. A chi-square analysis was used to test the difference in intention between groups, and the discrepancy between intention and

behaviour within and between groups. To test the role of theory, intentions were regressed on attitude, subjective norm and PBC, and attendance was regressed on PBC and intention in a logistic regression. An ANOVA was used to calculate differences in mean TPB scores between groups.

Results

Overall, participants had a mean BMI of 22.6 (SD = 3.34), and 75% of the sample was considered to be physically active. Prior to receiving the free fitness pass, 12.5% of participants reported regularly attending fitness classes, and 11.3% reported regularly attending fitness classes since receiving the free fitness pass. No significant differences were found between groups in BMI category (χ^2 (3, N = 164) = 1.51, p = .83), physical activity level (χ^2 (3, N = 168) = .156, p = .93), or whether or not participants had previously been attending fitness classes on a regular basis (χ^2 (3, N = 168) = .854, p = .65) (see Table 2).

INSERT TABLE 2 ABOUT HERE

Intentions and Expectations of Using the Free Fitness Pass

At pre-test, 79.8% (134) of participants intended to use the free fitness pass, while only 74.4% (125) expected that they would do so. For intention, the trend was in the hypothesized direction with 87.3% (48) of participants in the H group, 78.6% (44) of participants in the HE group, and 73.7% (42) of participants in the R group intending to use the free fitness pass. Contrary to the hypotheses, no significant difference was found between the H group and the R group (χ^2 (2, N = 112) = 3.27, p = .07), or between the H

and HE groups (χ^2 (2, N = 111) = 1.48, p = .22). As expected, no significant difference existed for intention between the HE and R groups (χ^2 (2, N = 113) = 3.71, p = .54).

A similar, but more obvious pattern was found for expectation at pre-test, with 83.6% (46), 73.2% (41), and 66.7% (38) of participants expecting they would use the free fitness pass in the H, HE, and R groups respectively. A significant difference in expectation was observed between the H and R groups (χ^2 (2, N = 112) = 4.30, p = .04). Similar to intention, no significant differences were found between the H and HE groups (χ^2 (2, N = 111) = 1.78, p = .18), or the HE and R groups (χ^2 (2, N = 113) = .576, p = .45).

Fitness Class Attendance

No passes were collected from the fitness coordinator one-month following pre-test indicating that no participant used their pass to attend a fitness class. Self-reported behaviour measured at post-test indicated that 1.8% (1) of participants in the H group, 12.5% (7) of participants in the HE group, and 3.5% (2) of participants in the R group reported using their free fitness pass. The HE group reported using the free pass more often than both the H group (χ^2 (2, N = 111) = 4.73, p = .03), and the R group (χ^2 (2, N = 113) = 3.12, p = .08). Of the 10 participants who reported using the free pass, 4 had been previously attending fitness classes on a regular basis.

Intention-Behaviour Relationship for Attending a Fitness Class

When fitness class attendance was measured via self-report, 14.5%, 30.3%, and 29.8% of the intention-behaviour relationships corresponded in the H, HE, and R groups respectively (a corresponding relationship is either positive intention and positive attendance, or negative intention and negative attendance; see Table 3). As hypothesized, a significant difference was found between the H and R groups (χ^2 (2, N= 112) = 3.80, p

= .05), and between the H and HE groups (χ^2 (2, N = 111) = 3.98, p = .05) in the number of corresponding relationships. No significant difference was found between the HE and R groups (χ^2 (2, N = 113) = .004, p = .95).

Also presented in Table 3 is the number of corresponding intention-behaviour relationships when fitness class attendance was objectively measured. Though not statistically significant, the number of corresponding intention-behaviour relationships was higher in the R group than in the H group (χ^2 (2, N = 112) = 3.27, p = .07). Contrary to what was hypothesized, no significant difference was found between the H and HE groups (χ^2 (2, N = 111) = 1.48, p = .22), though the trend was in the expected direction with the HE group having more corresponding relationships than the H group. As expected, no significant difference was found between the HE and R groups (χ^2 (2, N = 113) = .371, p = .54).

INSERT TABLE 3 ABOUT HERE

Expectation-Behaviour Relationship for Attending a Fitness Class

When fitness class attendance was measured via self-report, 18.2%, 35.7%, and 36.8% of the expectation-behaviour relationships corresponded in the H, HE, and R groups respectively (see Table 4). Similar to intention, all findings were as hypothesized. A significant difference was found between the H and R groups (χ^2 (2, N = 112) = 4.87, p = .03), and between the H and HE groups (χ^2 (2, N = 111) = 4.33, p = .04). As hypothesized, no significant difference was found between the HE and R groups (χ^2 (2, N = 113) = .576, p = .45).

Also presented in Table 4 is the proportion of corresponding expectation-behaviour relationships when fitness class attendance was objectively measured. As hypothesized, a significant difference was found between the H and R groups in terms of the number of corresponding expectation-behaviour relationships (χ^2 (2, N = 112) = 4.30, p = .04). Contrary to hypothesis, no significant difference was found between the H and HE groups (χ^2 (2, N = 111) = 1.78, p = .18), and as hypothesized, no significant difference was found between the HE and R groups (χ^2 (2, N = 113) = .576, p = .45).

INSERT TABLE 4 ABOUT HERE

Theory of Planned Behaviour Variables

Mean TPB variable scores for each group are presented in Table 5. No significant differences were found between groups in attitude (F [2,166] = .418, p = .66), subjective norm (F [2,167] = 1.06, p = .35), PBC (F [2,167] = .01, p = .99), or intention strength (F [2,167] = 1.73, p = .18).

INSERT TABLE 5 ABOUT HERE

Overall correlations between the TPB variables are presented in Table 6. Significant positive correlations were found between all variables except subjective norm and PBC. Fitness class attendance was not significantly correlated with any variable. Expectation was more highly correlated with all variables than was intention.

INSERT TABLE 6 ABOUT HERE

Intention was regressed on attitude, subjective norm and PBC scores in a logistic regression (see Table 7). Attitude was the only significant predictor of intention (OR = 4.64, 95% CI = 2.51 – 8.49). The model successfully predicted 95.5% of intenders and 44.1% of non-intenders, with an overall success rate of 85%. According to the Hosmer and Lemeshow test (χ^2 (8, N = 168) = 5.42, p = .71), there was a good model fit based on the predictors. Overall, the model accounted for between 24% and 37% of the variance in intention. Self-reported attendance was then regressed on PBC and intention (see Table 8). Neither construct was a significant predictor of fitness class attendance.

INSERT TABLE 7 ABOUT HERE

INSERT TABLE 8 ABOUT HERE

Manipulation Check

There were no significant differences between groups with regards to whether participants were suspicious of something in the study (χ^2 (3, N = 166) = .760, p = .68), whether participants' intentions changed once they were given the free pass (χ^2 (3, N = 167) = 2.46, p = .29), whether participants felt that their attendance to a fitness class was going to be monitored (χ^2 (3, N = 166) = .981, p = .61), or whether participants would

have been more likely to use their pass had they known their attendance was going to be monitored (χ^2 (3, N = 166) = 3.70, p = .16).

A significant difference was found between the HE and R groups (χ^2 (2, N = 106) = 4.21, p = .04) with a total of 18.0% (9) of participants in the HE group and 5.4% (3) of participants in the R group reporting giving their free fitness pass to a friend to use. Also, a significant difference was also found between the H and HE groups (χ^2 (2, N = 109) = 3.92, p = .05) with 11.1% (6) of participants in the H group and 1.8% (1) of participants in the HE group having felt that they were exposed to something different compared to others in the study.

Discussion

The aims of this study were to determine whether intentions formed in a hypothetical physical activity context are different than those formed in a real situation; and whether the intentions of participants who are hypothetically given a free pass to attend a fitness class better match their behaviour if they are administered a corrective entreaty, than if they are not. The first hypothesis proposed that a greater number of participants in the H group would have a positive intention and expectation to attend a fitness class compared to participants in the R group. For intention, the finding was in the hypothesized direction, with more positive intentions formed in the hypothetical situation than in the real situation, suggesting hypothetical bias. This finding was significant when expectation to attend a fitness class was measured as opposed to intention. These results are consistent with previous research that found intentions formed in a hypothetical situation are often greater than those formed in a real situation (Ajzen et al., 2004; Brown et al., 2003; Cummings & Taylor, 1999; Loomis, Brown,

Lucero & Peterson, 1996). To the researcher's knowledge, this is the first case of hypothetical bias studied in a physical activity context. Potential reasons the greater number of positive intentions and expectations formed in the hypothetical situation may be similar to those suggested previously (Brown et al., 2003), including the idea that participants may have over-estimated their willingness to attend a fitness class. Because the situation was hypothetical, participants did not think they would actually have to follow through and perform the behaviour and therefore formed intentions without thinking through potential consequences and barriers associated with performing the behaviour. Since the pass was free, participants may have immediately formed a positive intention because the pass normally costs $5.00. Also, physical activity is a socially desirable behaviour, therefore by forming positive intentions to attend a fitness class, participants felt that they would be perceived as exercisers. Further, because it is recommended that people participate in physical activity on a regular basis, participants felt that they should have a positive intention to perform the behaviour. Future research needs to determine why such a high proportion of positive intentions and expectations were formed in the hypothetical situation.

The first hypothesis also proposed that the number of participants with a positive intention and expectation in the HE group would be most similar to the R group, as opposed to the H group. The finding was in the expected direction with the number of positive intentions and expectations in the HE group most closely matching the R group. Though the difference between the H and HE group was not significant, the trend was in the hypothesized direction, with the H group having the highest number of positive intentions and expectations, the HE group having the second highest number of positive

intentions and expectations, and the R group having the least number of positive intentions and expectations to attend a fitness class. Similar to other studies, intentions formed in a hypothetical situation more closely match intentions formed in a real situation when a corrective entreaty is administered as opposed to when it is not (Ajzen et al., 2004).

To determine fitness class attendance, both subjective and objective measures were used. Using the objective measure, no passes were collected from the fitness coordinator, indicating that no participant used their pass to attend a fitness class. When behaviour was measured via self-report 6-weeks following pre-test assessment, 1.8% of participant in the H group, 12.5% of participants in the HE group, and 3.5% of participants in the R group reported using their free fitness pass. Based on self-report data, significantly more participants in the HE group reported using their fitness pass than participants in the H group. Potentially, after reading the corrective entreaty at pre-test, participants in the HE group knew that intentions to perform physical activity are often overestimated and do not match behaviour. These participants had been asked to be realistic when forming their intention, and to ensure their behaviour would match the positive intention they had formed, participants reported using the pass when they actually had not.

Despite the number of stated positive intentions to use the free fitness pass the fact that the objective measure of behaviour recorded no participant using the pass is consistent with previous research. For instance, French, Jeffery and Oliphant (1994) gave a group of women free access to a fitness facility in an attempt to increase their physical activity behaviour. No significant differences were found in physical activity

between women who received free access to the facility and those who did not. The fact that no fitness passes were used re-enforces French et al.'s finding that free access to a fitness facility or a fitness class does not necessarily increase physical activity, particularly among people, such as university students, who probably can afford the minimum cost of a fitness class.

The second hypothesis proposed that participants in the H group would show greater discrepancy between their intention and behaviour and their expectation and behaviour compared to participants in the R group, with the number of discrepant relationships in the HE group most closely matching the R group. When behaviour was measured using self-report, the R group and the HE group both had significantly more corresponding intention-behaviour relationships than the H group. As hypothesized, no differences were found between the HE and R groups, with both groups having the same number of corresponding intention-behaviour relationships. Therefore, participants who were hypothetically given a free fitness pass and administered a corrective entreaty had better correspondence between intention and behaviour than those hypothetically given a free pass who were not administered a corrective entreaty. Similar trends were found when behaviour was objectively measured, though none of the findings were significant.

Interestingly, similar results were found when expectation was used as the precursor to behaviour as opposed to intention. When fitness class attendance was measured using self-report, findings were in the expected direction with the HE and R groups having significantly more corresponding expectation-behaviour relationships than the H group, and the HE and R groups not differing significantly. Unlike intention, a significant difference was found in the number of corresponding expectation-behaviour

relationships between the H and R groups when behaviour was measured objectively. Similar to intention, no significant differences were found between the H and HE groups or the HE and R groups when behaviour was measured objectively, though the findings were in the expected direction. Overall, the correspondence between expectation and behaviour was better than the correspondence between intention and behaviour. Several researchers have found no reliable differences in the average correlations of intention and behaviour versus expectation and behaviour (Armitage & Conner, 2001; Sheeran & Orbell, 1998), though expectation has been found to be a better predictor of behaviour that is not under complete volitional control (Sheppard, Hartwick & Warshaw, 1988), such as physical activity (Courneya & McAuley, 1994). Further, research has found expectation to be more strongly correlated with physical activity compared to intention (Courneya & McAuley, 1993).

According to McBroom and Reid (1992), and Orbell and Sheeran (1998), the discrepancy between intention and behaviour results from inclined-abstainers (positive intention and negative behaviour), and disinclined-actors (negative intention and positive behaviour), as opposed to disinclined-abstainers (negative intention and negative behaviour) or inclined-actors (positive intention and positive behaviour). In the present study only one participant did not have the intention or the expectation of using the free fitness pass, but reported doing so anyways (disinclined-actor). All other discrepancies resulted from inclined-abstainers. This finding is consistent with other studies that found participants who failed to act on their positive intentions were mostly responsible for the intention-behaviour discrepancy (Sheeran & Orbell, 2000), meaning that the intention-behaviour discrepancy tends to result from intenders not acting, as opposed to

nonintenders acting (Godin, Shephard & Colantonio, 1986; Rhodes, Courneya & Jones, 2003; Sheeran, 2002). In a meta-analysis on the intention-behaviour relationship (Sheeran, 2002), the median percentage of intenders who failed to act was 47%, while the median percentage of non-intenders who performed the behaviour was 7%. In an exercise study, Sheeran & Orbell (2000) found 46% of people who intended to exercise followed through with the behaviour, while 54% did not. For those people who did not intend to exercise, 97% acted in accordance with their disinclination, while only 3% performed the behaviour when they originally did not intend to do so. Thus, participants who fail to act on their positive intentions are mainly responsible for the discrepancy between intention and behaviour (Sheeran, 2002), as was the case in the present study.

The third hypothesis proposed that the TPB constructs would be more favourable with respect to attending a fitness class in the H group, compared to the HE and R groups. This hypothesis was not supported. Ajzen et al. (2004) claimed that for the corrective entreaty to be effective it must create attitudes, subjective norms, perceptions of control, and intentions comparable to those formed in a real situation. The corrective entreaty did influence hypothetical bias in the present study, though minimally, without any differences in attitudes, subjective norms, or perceptions of control between groups. Apart from the correlation between subjective norm and PBC, significant correlations were found between attitude, subjective norm, PBC, and intention, with none of the constructs being significantly correlated with fitness class attendance. Further, expectation was more highly correlated with all of the TPB constructs than was intention. When intention to attend a fitness class was regressed on attitude, subjective norm, and PBC, attitude was the only significant predictor of intention, yet there were no

differences between groups in attitude. Overall, between 20-37% of the variance in intention was explained in the H group, 33-51% of the variance in intention was explained in the HE group, and 39-57% of the variance was explained in the R group. Thus, the TPB was most accurately explained in a real situation as opposed to a hypothetical situation. It can be suggested that the TPB may not as accurately predict intention and behaviour in a hypothetical situation because the theory was not developed to be used in a hypothetical scenario. Potentially, attitude, subjective norm, and PBC may influence intention differently in a hypothetical versus a real situation. For instance, attitude may be a better predictor of intention in a real situation as opposed to a hypothetical one.

The effect of the corrective entreaty in the present study may be explained by demand characteristics (Ajzen et al., 2004), implying that participants in the HE group felt that they should consider saying that they do not intend to use the free fitness pass because it is the perceived expectation of the researcher (Ajzen et al., 2004). This is potentially a possibility because there were no differences in attitude, subjective norm, or PBC between participants who were administered the corrective entreaty and those who were not, yet there were differences in intentions (Ajzen et al., 2004), though not significant.

The present study has several implications for using the corrective entreaty in a physical activity context. When studying the intention-behaviour relationship in a hypothetical situation, administering the corrective entreaty may result in the formation of more realistic intentions, better behavioural prediction from intention, and a better intention-behaviour relationship. The goal of the corrective entreaty is not to increase the

formation of positive intentions or increase physical activity behaviour, but to encourage realistic intention formation in a hypothetical situation. The number of negative intentions formed in the present study in the hypothetical situation increased with the administration of a corrective entreaty, bringing intentions down to more closely match intentions formed in the real situation. With regards to the objectively measured intention-behaviour and expectation-behaviour relationships, all corresponding relationships were a result of negative intentions and expectations matched with negative behaviour. Therefore, the corrective entreaty should not be administered in an effort to increase positive intentions or behaviour, but rather in an attempt to determine realistic intentions that better represent actual behaviour in a hypothetical situation.

Although the corrective entreaty was unsuccessful in completely eliminating the hypothetical bias trend in the present study, several points are worth discussing. Approximately a 10-percentage point difference in the number of positive intentions and expectations formed was observed between the H and the HE groups, and a 14 percentage point difference was observed between the H and R groups. According to Cohen (1991), these differences can be classified as being small to medium in size. In comparison, willingness-to-pay studies (Ajzen et al., 2004; Brown et al., 2003) have demonstrated large differences (22%-38%) between the H, HE, and R groups. It is possible that the H group was not "hypothetical" enough in the present study to create a sufficiently large discrepancy between the hypothetical and real situations. Although large proportional changes were not evident, a 10-percentage point difference could be considered meaningful. For instance, if a corrective entreaty were used when asking community residents their intention to use a fitness facility if it were constructed, a 10-

percentage point difference in results could be the equivalent of hundreds to thousands of people at a population level. Therefore, although the 10-percentage point decrease was not found to be statistically significant, we believe there is promise for the use of a corrective entreaty in a physical activity context.

Limitations

This study has several limitations that should be acknowledged. First, because only undergraduate students were studied, the results cannot be generalized beyond this population. Also, because the behaviour was specific to attending a fitness class, results cannot be generalized to all physical activity behaviour. Research on the corrective entreaty in a physical activity context is still preliminary; therefore different populations and different types of physical activity should be studied in order to determine the usefulness of this script.

A second limitation is the procedure that was used. Due to time restrictions, all three groups (H, HE and R) were tested at the same time in an intact class. While one participant was reading the corrective entreaty, another participant may have been questioning the fact that they did not receive such a script, and were therefore suspicious of the different questionnaires. There is also the possibility that participants may have spoken with each other following the pre-test and discovered that they were exposed to different conditions. Though no differences were observed in fitness class attendance, the fact that different questionnaires were used may have aroused suspicion to the true purpose of the study.

Finally, the fact that 75% of the sample was physically active may be considered a limitation. The proportion of physically active students in the present study was higher

than previous studies (see Keating, Guan, Pinero, & Bridges, 2005), indicating that the results may not be generalizable to less active undergraduate populations

Future Research

The corrective entreaty should be further researched in a physical activity context to validate its relevance, to determine its potential usefulness, and to determine which variables contribute to differences in intention to be physically active. To eliminate hypothetical bias, it would also be useful to determine which parts of the corrective entreaty need to be included in the script when applied in a physical activity context. For instance, a shorter version of the script used by Loomis et al. (1996) in a willingness-to-pay study, which did not educate participants about hypothetical bias, was not as successful at reducing hypothetical bias, and the script developed by Cummings and Taylor (1999) has been criticized by Brown et al. (2003) as being too long and therefore difficult to apply over the phone. Perhaps the components that are included in the corrective entreaty in willingness-to-pay studies are not required or applicable in physical activity studies.

Conclusion

Research has shown that intentions formed in a hypothetical situation are often poor predictors of future behaviour, especially intentions to perform socially desirable behaviours. This was the first time that the corrective entreaty has been applied in a physical activity context. With the administration of a corrective entreaty, physical activity intentions and expectations formed in a hypothetical situation were much closer to those formed in a real situation and were much more representative of self-reported physical activity, resulting in a better intention-behaviour and expectation-behaviour

relationship. Future research should further investigate the usefulness of the corrective entreaty in a physical activity context.

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Table 1

Order of Questionnaire Packages

H Group	HE Group	R Group
Demographics	Demographics	Demographics
GLTEQ	GLTEQ	GLTEQ
	Corrective Entreaty	
BIQ	BIQ	Free Fitness Pass
Free Fitness Pass	Free Fitness Pass	BIQ

Note. GLTEQ = Godin Leisure Time Exercise Questionnaire; BIQ = Beliefs and Intentions Questionnaire.

Table 2

Descriptive Statistics by Groups (N = 168)

	H group	HE group	R group	Overall
Mean BMI ± *SD*	23.1 ± 3.23	22.8 ± 3.97	22.1 ± 2.69	22.6 ± 3.34
Physically Active (%)	76.4	73.2	75.4	75.0
Pre-pass attendance (%)	10.9	10.7	15.8	12.5
Post-pass attendance (%)	9.1	10.7	14.0	11.3

Note. H group = Hypothetical Group; HE group = Hypothetical with Corrective Entreaty Group; R group = Real Group. BMI = Body mass index; SD = Standard deviation. Pre-pass attendance = Proportion of participants regularly attending fitness classes prior to receiving fitness pass. Post-pass attendance = Proportion of participants regularly attending fitness classes after receiving fitness pass.

[a] Proportion of *yes* responses.

Table 3

Proportion of Corresponding and Non-Corresponding Intention-Behaviour Relationships by Group (N = 168)

		Self-Report Fitness Class Attendance		Objective Fitness Class Attendance	
		+'ve behaviour	-'ve behaviour	+'ve behaviour	-'ve behaviour
H group	+'ve intention	1.8	85.5	0	87.3
	-'ve intention	0	12.7	0	12.7
HE group	+'ve intention	10.7	67.9	0	78.6
	-'ve intention	1.8	19.6	0	21.4
R group	+'ve intention	3.5	70.2	0	73.7
	-'ve intention	0	26.3	0	26.3

Note. H group = Hypothetical Group; HE group = Hypothetical with corrective entreaty Group; R group = Real Group.

Table 4

Proportion of Corresponding and Non-Corresponding Expectation-Behaviour Relationships by Group (N = 168)

		Self-Report Fitness Class Attendance		Objective Fitness Class Attendance	
		+'ve behaviour	-'ve behaviour	+'ve behaviour	-'ve behaviour
H group	+'ve expectation	1.8	81.8	0	83.6
	-'ve expectation	0	16.4	0	16.4
HE group	+'ve expectation	10.7	62.5	0	73.2
	-'ve expectation	1.8	25.0	0	26.8
R group	+'ve expectation	3.5	63.2	0	66.7
	-'ve expectation	0	33.3	0	33.3

Note. H group = Hypothetical Group; HE group = Hypothetical with Corrective Entreaty Group; R group = Real Group.

Table 5

Means and Standard Deviations (SD) of Theory of Planned Behaviour Constructs in Relation to Attending a Fitness Class by Group (N = 168)

	H group		HE group		R group	
	Mean	SD	Mean	SD	Mean	SD
Attitude	5.24	.839	5.37	.772	5.37	1.02
SN	3.79	1.50	3.71	1.59	3.38	1.75
PBC	5.04	1.32	5.03	1.11	5.07	1.35
Intention Strength	4.16	1.48	4.14	1.44	4.60	1.55

Note. H group = Hypothetical Group; HE group = Hypothetical with Corrective Entreaty Group; R group = Real Group; SN = Subjective norm; PBC = Perceived behavioural control. M = Mean; SD = Standard deviation.

Table 6

Correlation Matrix for Theory of Planned Behaviour Variables

	1	2	3	4	5	6
1. Attitude[a]	--	.37**	.25**	.52**	.55**	.04
2. Subjective Norm[b]		--	.09	.19*	.20**	.03
3. PBC[b]			--	.20**	.25**	.07
4. Intention[b]				--	.83**	.06
5. Expectation[b]					--	.09
6. Fitness Class Attendance[b]						--

Note. PBC = Perceived behavioural control

[a] $n = 167$. [b] $n = 168$.

* $p < .05$. ** $p < .01$

Table 7

Logistic Regression Predicting Intention to Attend a Fitness Class

Predictor	ß	S.E.	Wald's	*df*	*p*	odds ratio
Attitude	1.53	.31	24.15	1	.000	4.61
SN	.001	.61	0	1	.99	1.00
PBC	.20	.81	1.17	1	.28	1.21

Note. S.E. = Standard error; SN = Subjective norm; PBC = Perceived behavioural control.

Table 8

Logistic Regression Predicting Behaviour (Fitness Class Attendance)

Predictor	ß	S.E.	Wald's	*df*	*p*	odds ratio
PBC	-.25	.30	.66	1	.42	.78
Intention	-.72	1.09	.45	1	.51	.49

Note. S.E. = Standard error; PBC = Perceived behavioural control.

Chapter III - Overview, Implications and Future Directions

The aims of this study were to determine whether intentions formed in a hypothetical physical activity situation were different than those formed in a real situation; and whether the intentions of participants who were hypothetically given a free pass to attend a fitness class better match their behaviour if they were administered a corrective entreaty, than if they were not. The trends were as hypothesized, though not significant, with more participants in the H group forming a positive intention to attend a fitness class than participants in the R group. The corrective entreaty successfully reduced the hypothetical bias trend, with the number of positive intentions formed in the HE group most closely matching the R group. Similar results were found with expectation to attend a fitness class, though significantly more positive expectations were formed in the H group than the R group.

With regards to the intention-behaviour and expectation-behaviour relationships, when behaviour was measured using self-report, there was significantly better correspondence between intention and behaviour and between expectation and behaviour in the R group than in the H group. The correspondence in the HE group, most closely matched the R group, and no significant differences were found between the HE and R groups. Similar trends were found when behaviour was objectively measured, though the findings were not significant. Further, more corresponding relationships were found for expectation and behaviour than for intention and behaviour.

It was hypothesized that the TPB constructs would be more favourable with respect to attending a fitness class in the H group, compared to the HE and R groups. This was not the case as no significant differences were found in attitude, subjective

norm, or PBC between groups. When intention was regressed on attitude, subjective norm, and PBC, between 20-37% of the variance in intention was explained in the H group, 33-51% of the variance in intention was explained in the HE group, and 39-57% of the variance was explained in the R group. It can be suggested that the TPB is most accurately represented in a real situation as opposed to a hypothetical situation. Potentially, attitude, subjective norm, and PBC may be formed differently in a hypothetical situation versus a real situation.

Implications

The present study has several implications for using the corrective entreaty in a physical activity context. When studying the intention-behaviour relationship in a hypothetical situation, administering the corrective entreaty can result in the formation of more realistic intentions, better behavioural prediction from intention, and a better intention-behaviour relationship. Examples of scenarios where researchers would require realistic intention formation include determining potential usage of a fitness facility, implementing physical activity policies in the workplace and determining whether these policies would be taken advantage of, and determining whether physical activity promotional campaigns would be effective. For instance, it may be suggested that building a fitness facility or constructing a walking trail would increase physical activity behaviour. Before funding the construction of these amenities, it would be important to determine whether these facilities would actually be used. Based on previous research (Brown et al., 2003; Cummings & Taylor, 1999), if participants were asked if they would utilize the facility to increase their physical activity behaviour if it were built, it is likely that they would overestimate their usage. If a corrective entreaty were administered, a

more accurate estimation of potential usage could be made. By getting people to be realistic about their intentions, millions of dollars could be saved in the construction of facilities that would not result in an increase in physical activity behaviour.

Another example of how a corrective entreaty could be applied in a physical activity context would be when researching whether a promotional campaign would effectively increase physical activity behaviour in a population. Prior to implementing a promotional strategy, researchers could utilize a corrective entreaty and ask participants their intention to take advantage of the campaign. Researchers could then determine whether their promotional campaign would be beneficial.

It should be understood that the goal of the corrective entreaty is not to increase the formation of positive intentions or increase physical activity behaviour, but to encourage realistic intention formation in a hypothetical situation. The number of negative intentions formed in the hypothetical situation in the present study increased with the administration of a corrective entreaty, bringing intentions down to more closely match intentions formed in the real situation. With regards to the objectively measured intention-behaviour and expectation-behaviour relationships, all corresponding relationships were a result of negative intentions and expectations matched with negative behaviour. Therefore, the corrective entreaty should not be administered in an effort to increase positive intentions or behaviour, but rather in an attempt to determine realistic intentions in a hypothetical situation.

Another research contribution that has resulted from the present study is evidence for the lack of correspondence between intention and behaviour. Because physical activity research is not regularly conducted in a hypothetical situation, the intention-

behaviour relationship of participants in the real group from the present study will be compared to previous intention-behaviour relationship research. Using the objective measure of behaviour from the present study, 73.7% of participants in the R group had a positive intention to use the free fitness pass that was provided to them, but not one participant did. Only 26.3% of intentions accurately predicted behaviour, all of which were negative intentions. For the subjective measure of behaviour, intention explained 2.2% - 8.3% of the variance in behaviour, which is much lower than previous research has reported (see Sheeran, 2002).

Several suggestions can be made as to why not one participant used their free fitness pass. For instance, participants may have been unable to overcome barriers associated with attending a fitness class such as remembering to bring proper clothing, remembering to bring the free fitness pass, or finding a class to fit their schedule. Also, participants may have preferred exercising with a partner, and therefore did not want to attend the class alone. It is also possible that participants forgot that they had been given the pass. Further, the 4-week period that participants had to use the free pass fell during spring break when no fitness classes were offered. Midterms may have also fallen during this 4-week period, but it was difficult to find a 4-week period during the semester where no tests were being conducted.

A final research contribution from the present study was the difference found between the subjective and objective measures of behaviour. It may be questioned as to whether any benefit existed in using the self-reported measure of fitness class attendance when an objective measure of fitness class attendance was also determined. We believe there is merit to using the self-report measure. One reason is to compare the results from

the present study to previous and future self-reported intention-behaviour research. Further, by analyzing both measures of fitness class attendance, the self-report and objective measures can be compared and the discrepancy between the two measures can be reported. The present study provides evidence for the suggestion that self-reported physical activity is often over-reported (Baranowski, 1988). Ten participants reported using their free fitness pass in the present study, while the objective measure found that not one participant used the free fitness pass. Interestingly, of the 10 participants who reported using the free pass, 4 of these participants were already attending fitness classes on a regular basis. It is possible that those participants who already attended fitness classes on a regular basis were more likely to attend other fitness classes because it is a behaviour they enjoy and regularly take part in. No passes were collected from the fitness coordinator, therefore it is assumed that these participants did not actually use their pass to attend a different fitness class. Thus, it is likely that when reporting whether or not they used their fitness pass, participants who reported using the pass misread the question, misunderstood the question, or felt that because they attended fitness classes on a regular basis, they could report that they had used their pass.

Although the corrective entreaty was unsuccessful in completely eliminating the hypothetical bias trend in the present study, several points are worth discussing. Approximately a 10-percentage point difference in the number of positive intentions and expectations formed was observed between the H and the HE groups, and a 14-percentage point difference was observed between the H and R groups. According to Cohen (1991), these differences can be classified as being small to medium in size. In comparison, willingness-to-pay studies (Ajzen et al., 2004; Brown et al., 2003) have

demonstrated large differences (22%-38%) between the H, HE, and R groups. It is possible that the H group was not "hypothetical" enough in the present study to create a sufficiently large discrepancy between the hypothetical and real groups. Although large proportional changes were not evident, a 10-percentage point difference could be considered meaningful. For instance, if a corrective entreaty were used when asking community residents their intention to use a fitness facility if it were constructed, a 10-percentage point difference in results could be the equivalent of hundreds to thousands of people at a population level. Therefore, although the 10-percentage point decrease was not found to be statistically significant, we believe there is promise for the use of a corrective entreaty in a physical activity context.

Limitations

There were several limitations in the present study that should be acknowledged. First, because only undergraduate students were studied, results cannot be generalized beyond this population. Also, because females accounted for the majority of the population (88.1%), caution should be taken when generalizing these results to males. Further, because the behaviour studied was specific to attending a fitness class, results cannot be generalized to all physical activity behaviour. Because research on the corrective entreaty in a physical activity context is still preliminary, different populations and different behaviours need to be studied in order to determine the usefulness of the script.

A second limitation is the procedure that was used. Due to time restrictions, all 3 groups (H, HE and R) were tested at the same time in an intact class. It is possible that while one participant was reading the corrective entreaty, another participant may have

been questioning the fact that they did not receive such a script, and were therefore suspicious of the different questionnaires. There is also the possibility that participants may have spoken with each other following the pre-test and may have discovered that they were exposed to different conditions. Though this may not have influenced fitness class attendance, it may have aroused suspicion to the true purpose of the study.

A third limitation is the timing of the study. Unfortunately spring break fell during the 4-week period where participants were able to use their fitness pass. No fitness classes were held during this time, therefore this was a 1-week period where passes could not be used.

A final limitation is the statistical method used to analyze the data. Because fitness class attendance was measured using a dichotomous measure, non-parametric analyses were conducted. Non-parametric tests have less stringent assumptions and are less powerful than parametric tests (Pallant, 2005), thus they are less sensitive to detecting statistically significant differences between groups. Therefore, it is possible that real differences may have gone undetected. Also, because multiple comparisons were made, there is a risk of Type 1 error.

Future Research

Because the present study was the first to utilize a corrective entreaty in a physical activity setting, future research is required. Reasons for the success of the corrective entreaty, even if minimal, need to be determined. Future research also needs to determine whether the corrective entreaty actually changes participants' intentions, or whether demand characteristics suggest to participants that they should consider

responding in the manner perceived to be expected by the experimenter (Ajzen et al., 2004).

Future research also needs to determine which components of the corrective entreaty are required in order to observe differences in intention. For instance, a shorter version of the script used by Loomis et al. (1996) was not as successful at reducing hypothetical bias, and the script developed by Cummings and Taylor (1999) has been criticized by Brown et al. (2003) as being too long and therefore difficult to apply over the phone. Also, certain points that result in changes in attitudes, subjective norms, and PBC were absent or unsuccessful in the case of the present study, and therefore need to be clarified.

Because the present study was the first the use a corrective entreaty in a physical activity setting, future research is required to validate its success. The corrective entreaty needs to be applied in situations such as those suggested to provide evidence for its success in a physical activity setting. Different populations, different physical activity behaviours, and both males and females need to be studied further.

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Appendix A – Literature Review

The following is a brief literature review of: protection motivation theory; theories of reasoned action and planned behaviour; intentions vs. expectations; measurement of intention; the intention-behaviour relationship; factors influencing the intention behaviour relationship; and the intention-behaviour relationship and past behaviour.

Protection Motivation Theory (PMT)

PMT proposes that behavioural intentions are influenced by a person's threat appraisal and coping appraisal (Norman, Boer & Seydel, 2005). An individual will be more motivated to perform a protective behaviour when the perceived vulnerability to a disease is high, when the individual believes the response will be effective, and when the individual feels able to perform the behaviour (Norman et al., 2005). Milne, Orbell and Sheeran (2002) implemented a motivational intervention and studied its effect on exercise cognitions, intention, and behaviour. They found positive changes in all PMT variables and an increase in intention to exercise, but found no change in exercise behaviour (Milne et al., 2002). PMT has been found to account well for intentions to change behaviour, but is limited in explaining behaviour (Floyd, Prentice-Dunn & Rogers, 2000; Milne, Sheeran & Orbell, 2000). This evidence confirms suggestions made by Norman and Conner (1996) that social cognitive models of health-related behaviour are generally more successful at predicting intentions than behaviour.

Theories of Reasoned Action (TRA) and Planned Behaviour (TPB)

TRA and TPB are often used to guide the development of intervention strategies promoting physical activity (See Culos-Reed, Gyurcsik & Brawley, 2001). Both theories

state that behavioural intention is the most important and best determinant of actual behaviour. According to TRA, intentions are predicted by attitudes and subjective norms. Attitude refers to a person's overall evaluation, whether positive or negative, of performing a behaviour; while subjective norm refers to an individual's perceived social pressure to perform a behaviour. TPB was developed with the addition of PBC (Ajzen, 1985), which is a person's appraisal of their ability to perform a behaviour. PBC accounts for behaviours that require resources, opportunity, or cooperation of others, and are therefore not completely under volitional control. PBC has both an interactive influence (through intentions) and a direct influence on behaviour, and contributes an additional 5% - 14% variance in intention over and above that from attitudes and subjective norms (Godin & Kok, 1996; Sheeran & Taylor, 1999). In sum, according to the TPB, the more favourable a person's attitude, subjective norm, and PBC towards performing a behaviour, the more likely the person will intend to perform the behaviour. Further, the greater the intention, the more likely the person is to perform the behaviour. In a meta-analysis reported by Hagger et al. (2002) on the application of TRA/TPB to physical activity, intentions significantly predicted behaviour; attitude and PBC were the best predictors of intention; and subjective norm was the worst predictor of intention. TRA constructs explained 37% of the variance in intention, and 26% of the variance in behaviour. With the addition of PBC, the TPB explained 44% of the variance in intention, and 27% of the variance in behaviour. Because PBC has a large influence on physical activity intentions, Hagger et al. concluded that the TRA was inferior to the TPB for explaining variance in intention.

Intentions vs. Expectations

The assessment of behavioural intention is often interchanged with the assessment of behavioural expectations (Courneya & McAuley, 1994; Davis & Warshaw, 1992; Warshaw & Davis, 1985, 1986). The difference between these two constructs and how they are applied in research is of interest to many researchers (Courneya & McAuley, 1994; Rhodes & Hunt-Matheson, 2005; Warshaw & Davis, 1985). Warshaw and Davis define behavioural intention as "the degree to which a person has formulated conscious plans to perform or not to perform some specified future behaviour" (p. 215), and behavioural expectation as "the individual's estimation of the likelihood that he or she actually will perform some specified future behaviour" (p. 215).

Intentions and expectations are formed in different ways (Warshaw & Davis, 1985). When answering intention items, responses are based more on behavioural beliefs, and when answering expectation items, responses are based more on temporal circumstances and past experience with the behaviour (Gordon, 1990). Expectation has been found to be good predictor of behaviour because it takes into consideration fluctuations in motivation, and interactions with volitional control factors (Rhodes & Hunt-Matheson, 2005). In fact, expectation is a better predictor of behaviour that is not under complete volitional control (Sheppard et al., 1988), such as physical activity (Courneya & McAuley, 1994). Not surprisingly, expectation has been found to be more strongly correlated with physical activity than has intention (Courneya & McAuley, 1993). Though the difference between the correlations was not large, an additional 9% variance was shared between expected frequency and behavioural frequency (Courneya & McAuley, 1993). Courneya and McAuley (1994) suggested that if sedentary or less

active individuals are sampled, then the difference between intentions and expectations may be even more evident, with expectations correlating more highly with physical activity.

In contrast, in meta-analyses done by Armitage and Conner (2001), and Sheeran and Orbell (1998) no reliable differences in the average correlations obtained for intention and behaviour versus expectation and behaviour were reported. Other studies have found differences between intention-behaviour and expectation-behaviour correlations to be small, and sometimes inconsistent (Armitage & Connor, 2001; Warshaw & Davis, 1985). Warshaw and Davis claim that if PBC and commitment to intentions are high, intention and expectation should converge; but expectation should deviate from intention when PBC and commitment to intention are in question. In summary, expectations and intentions explain behavioural variance, but further research comparing these two constructs and when they are best applied is required.

Measurement of Intention

Intention and behaviour can be measured several ways. For instance, Courneya, Jones, Rhodes and Blanchard (2003) claim there are 5 types of response scales used in research that examine social cognitive correlates of exercise: continuous-open, continuous-closed numerical, continuous-closed verbal, dichotomous-yes/no, and dichotomous-graded, all of which have been used in physical activity research. An open scale is unrestricted in the number of response options, while a closed scale has a restricted numbers of response options. When using these scales to measure intention, participants might be asked, "How many times do you intend to exercise strenuously (i.e., sweating and breathing hard) for at least 20 minutes over the next month?" Participants

answering on a continuous-open scale would be given a blank space to record their response. This method is considered the "gold standard" because no response scale potentially influencing participants' responses is used, and no information is lost from grouping (Courneya et al., 2003). When answering on a dichotomous scale, a cut-point would be established, such as "greater than 10 times", or "less than 10 times", and participants would be asked to choose one of the 2 responses. A closed-continuous verbal scale would have possible responses on a 5-point scale ranging from *Never* to *Always*. This response scale is not considered to be ideal because responses are left for interpretation by the respondent (Courneya et al., 2003). A continuous-closed numerical scale would have possible responses ranging on a 7-point numerical scale.

Another factor to consider when measuring intention is the correspondence between the intention and behaviour measures (Courneya & McAuley, 1994). For instance, if a dichotomously-worded intention measure is compared to a frequency measure of behaviour, the correlation between intention and behaviour may not reflect the actual relationship (Courneya & McAuley, 1994). Similarly, the time frame specified in the intention measure must correspond with the target behaviour (Maibach & Murphy, 1995). When measuring expectation and behaviour, similar considerations must be taken into account.

The Intention-Behaviour Relationship

As previously mentioned, several behavioural theories used in physical activity research state that intentions should lead directly to behaviour (Ajzen, 1985, 1991; Fishbein & Ajzen, 1975; Rogers, 1983), though research has shown that intentions typically explain less then 30% of the variance of future behaviour (see Armitage &

Conner, 2001; Godin & Kok, 1996). Sheeran (2002) conducted a meta-analysis of meta-analyses on the intention-behaviour relationship, which included 10 different meta-analyses using prospective measures of behaviour. Overall, intentions accounted for, on average, 28% of the variance in behaviour. Lack of correspondence between intention and behaviour is by definition an intention-behaviour discrepancy.

The intention-behaviour discrepancy results from intenders not acting, and nonintenders acting (Godin, Shephard & Colantonio, 1986; Rhodes, Courneya & Jones, 2003; Sheeran, 2002). Those who are inclined to perform a behaviour and follow through with their inclination are characterized as *inclined actors,* while those who do not follow through with their inclination are characterized as *inclined abstainers* (McBroom & Reid, 1992; Orbell & Sheeran, 1998). Those who are not inclined to perform a behaviour can either act in accordance with their disinclination (*disinclined abstainers),* or act against their disinclination (*disinclined actors)* (McBroom & Reid, 1992; Orbell & Sheeran, 1998). It is the inclined abstainers and the disinclined actors who are responsible for the intention-behaviour discrepancy. For example, in an exercise study by Sheeran & Orbell (2000), 46% of people who intended to exercise followed through with the behaviour, while 54% did not. For those participants who did not intend to exercise, 97% acted in accordance with their disinclination, while only 3% performed the behaviour when they originally did not intend to do so (Sheeran & Orbell, 2000). These findings suggest that it is the participants who fail to act on their positive intentions who are mostly responsible for the discrepancy. Further analysis found that inclined actors and inclined abstainers did not differ in their intentions, attitudes, subjective norms, or PBC,

implying that none of the TPB constructs were capable of distinguishing inclined actors from inclined abstainers (Sheeran, 2002).

Factors Influencing the Intention-Behaviour Relationship

While the majority of Canadians intend to be physically active in the next 6 months (Canadian Fitness and Lifestyle Research Institute, 2000), 56% of Canadians are considered insufficiently active to achieve optimal health benefits (Canadian Fitness and Lifestyle Research Institute, 2002). Why intentions are not being translated into behaviour needs to be addressed. Motivation is one possible factor that may influence the intention-behaviour relationship (Rhodes et al., 2003). The association between motivation and behaviour is typically assessed by looking at the correlation between intention, which serves as a measure of motivation, and behaviour (Orbell & Sheeran, 1998). Statistically significant positive correlations indicate that people who are motivated to perform a behaviour are more likely to act than those who are not motivated (Kraus, 1995; Sheppard et al., 1988). Because motivation levels fluctuate over time, intention-behaviour discrepancies result (Sutton, 1998) and the predictive validity of behaviour is variable (Rhodes et al., 2003). Time can influence the intention-behaviour relationship in several ways, such as changes in attitude, subjective norm, or PBC over time; or unforeseen personal or environmental factors happening over time resulting in an inability to act on intention (Tubbs & Ekeberg, 1991). It has been stressed that intention should be determined as closely as possible in time to behavioural performance (Ajzen, 1985; Ajzen & Madden, 1986).

Conversely, in a meta-analysis by Randall & Wolff (1994), it was concluded that the relationship between intention and behaviour does not significantly decrease over

time. However, this meta-analysis was criticized by Sheeran and Orbell (1998) for not having enough studies on the same behaviour type to draw firm conclusions. Sheeran and Orbell therefore conducted a meta-analysis demonstrating that proximal intentions, compared to distal intentions, were more accurate predictors of health behaviour. Conner, Sheeran, Norman and Armitage (2000) further pointed out that health behaviours were better predicted by stable intentions (unchanged over time) than by unstable intentions (changed over time).

As shown by Conner et al. (2000), intention stability is an important factor to consider with regards to the intention-behaviour relationship. Intention stability is typically measured by within-participant correlations between measures taken at two time points (Sheeran, Orbell & Trafimow, 1999). Doll & Ajzen (1992) found that intention stability moderated the intention-behaviour relationship, while Bagozzi & Yi (1989) found no moderating effect. These findings are contradictory because intention stability was determined using intention scores measured before and after behavioural performance (Sheeran et al., 1999). Sheeran et al. suggested that because intention was measured after performing the behaviour, the score may be a result of self-presentational or consistency biases, as opposed to actual intention. Sheeran et al. tested their criticism by measuring intention at two time points prior to behavioural performance, and reported that when intentions were unstable (changed over time), they did not predict behaviour, and past behaviour was a better predictor of future behaviour. However, when intentions were stable (unchanged over time), past behaviour did not predict future behaviour, and intentions were a better predictor of behaviour. To confirm these findings, Conner et al. looked at intention stability in health check attendance and eating a low-fat diet, and

reported that stable intentions were a better predictor of future behaviour than were unstable intentions.

Continued research on this topic has found that degree of intention formation influences intention stability (Sheeran, 2002). Degree of intention formation refers to "the extent to which participants have thought through the consequences of their decision to act in a particular manner" (Sheeran, 2002, p.18). Poorly formed intentions result from not thinking through a decision, and will likely result in unanticipated disadvantages or difficulties (Sheeran, 2002). Poorly formed intentions are also more likely to be unstable and changing (Sheeran, 2002). Participants who have thought through a decision, and have well-formed intentions, are better able to anticipate obstacles or difficulties and are more likely to follow through with their intentions (Sheeran, 2002). Further, well-formed intentions exhibit more temporal stability than poorly formed intentions (Bagozzi & Yi, 1989).

The Intention-Behaviour Relationship and Past Behaviour

In an attempt to explain behavioural variance, past behaviour (Oullette & Wood, 1998), self-identity (Sparks & Guthrie, 1998), anticipated regret (van der Pligt & de Vries, 1998), affect (Manstead & Parker, 1995), moral norms (Conner & Armitage, 1998) and personality (Conner & Abraham, 2001; Courneya, Bobick & Schinke, 1999; Rhodes & Courneya, 2003) have been studied and reported to have an additional predictive ability for behaviour, independent of intention. Specifically, habit and past behaviour have gained significant research attention with regards to their influence on the intention-behaviour relationship (Sheeran, 2002). Studies applying TRA and TPB often report that measures of past behaviour predict future behaviour better than measures of intention

(Sheeran, 2002). When performing a habitual behaviour, conscious intentions are not required because the behaviour occurs in response to an environmental event (Ouellette & Wood, 1998), while conscious intentions are required when attempting to counter habitual behaviours or change bad habits (Ouellette & Wood, 1998).

Norman and Smith (1995) measured past behaviour and TPB constructs in an exercise setting, and found that with the addition of past behaviour, exercise frequency over a 6-month period was better predicted. Norman and Smith concluded that past behaviour had a direct influence on future exercise behaviour. To further this conclusion, Ouellette and Wood (1998) claimed that past behaviour, as opposed to intention, better predicted future behaviour in stable contexts, while intentions better predicted future behaviour in unstable contexts. Stable contexts are required to form habits because they provide a constant support environment for performance, while unstable contexts challenge customary responses (Ouellette & Wood, 1998). In contrast, evidence has suggested that regardless of the frequency or context of behavioural performance, past behaviour does not influence the intention-behaviour relationship for participants with stable intentions (Sheeran et al., 1999). When intentions were unstable, past behaviour was the best predictor of subsequent behaviour (Sheeran et al., 1999).

In another study looking at the influence of past behaviour on exercise, Sheeran and Abraham (2003) reported that intention and PBC explained 52% of the variance in exercise behaviour, but with the addition of past behaviour to the regression equation, the explained variance increased to 67%, and intention was no longer significant. In a meta-analysis reported by Hagger et al. (2002) on the application of TPB to exercise, it was reported that when past behaviour was included with the TPB constructs, past behaviour

was a significant predictor of behaviour, intention, attitude, subjective norm, and PBC. By including self-efficacy and past behaviour with TPB constructs, 60% of the variance in intention and 46% of the variance in behaviour was explained (Hagger et al., 2002).

In summary, past behaviour, to some extent, is related to future behaviour. More specifically, having performed exercise behaviour in the past may influence exercise behaviour in the future. Even if the influence is indirect, past behaviour may potentially influence future behaviour more so than intentions.

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Appendix B – Questionnaires, Corrective Entreaty, Information Letter & Debriefing Letter

UNIVERSITY OF ALBERTA

Participant Information

Identification:

1. Age: _____

2. University Major: _____

3. Sex: MALE FEMALE

4. Height: _____inches or _____cm

5. Weight: _____lbs. or _____kg

6. Last 5 Digits of your Student ID # _X_ _X_ ___ ___ ___ ___ ___

7. Do you have any physical disability that would inhibit you from taking part in physical activity?

YES NO

UNIVERSITY OF ALBERTA

Godin Leisure Time Exercise Questionnaire

During a typical **7-Day period** (a week), how many times on the average do you do the following kinds of exercise for **more than 15 minutes** during your free time (write on each line the appropriate number).

Times Per

Week

a) **STRENUOUS EXERCISE**
(HEART BEATS RAPIDLY, SWEATING) _____
(e.g., running, jogging, hockey, football, soccer, squash, basketball, cross country skiing, judo, roller skating, vigorous swimming, vigorous long distance bicycling)

b) **MODERATE EXERCISE**
(NOT EXHAUSTING, LIGHT PERSPIRATION) _____
(e.g., fast walking, baseball, tennis, easy bicycling, volleyball, badminton, easy swimming, alpine skiing, popular and folk dancing)

c) **MILD EXERCISE**
(MINIMAL EFFORT, NO PERSPIRATION) _____
(e.g., yoga, archery, fishing from river bank, bowling, horseshoes, golf, snow-mobiling, easy walking)

2. During a typical **7-Day period** (a week), in your leisure time, how often do you engage in any regular activity **long enough to work up a sweat** (heart beats rapidly)?

OFTEN		SOMETIMES		NEVER/RARELY
1	2	3	4	5

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Fitness and Lifestyle Centre Promotional Study

1. This set of questions asks you to rate how likely you feel it is that you will be able to attend an organized fitness class (e.g., kickboxing, step aerobics, spin cycle) over the next month. Pay careful attention to the words and descriptors at the end of each scale and circle the answer that best represents your feelings.

a) How controllable is it for you to attend a fitness class over the next month?

1	2	3	4	5	6	7
Extremely uncontrollable	Quite uncontrollable	Slightly uncontrollable	Neutral	Slightly controllable	Quite controllable	Extremely controllable

b) How easy or difficult is it for you to attend a fitness class over the next month?

1	2	3	4	5	6	7
Extremely difficult	Quite difficult	Slightly difficult	Neutral	Slightly easy	Quite easy	Extremely easy

c) Do you feel that whether or not you attend a fitness class over the next month is completely up to you?

1	2	3	4	5	6	7
Extremely disagree	Quite disagree	Slightly disagree	Neutral	Slightly agree	Quite agree	Extremely agree

d) How confident are you that you could attend a fitness class over the next month?

1	2	3	4	5	6	7
Extremely unconfident	Quite unconfident	Slightly unconfident	Neutral	Slightly confident	Quite confident	Extremely confident

e) Do you feel you would have complete control over whether or not you attend a fitness class over the next month?

1	2	3	4	5	6	7
Extremely untrue	Quite untrue	Slightly untrue	Neutral	Slightly true	Quite true	Extremely true

f) How certain or uncertain are you that you could attend a fitness class over the next month?

1	2	3	4	5	6	7
Extremely uncertain	Quite uncertain	Slightly uncertain	Neutral	Slightly certain	Quite certain	Extremely certain

2. The following question asks you to rate how you feel about participating in an organized fitness class (e.g., kickboxing, step aerobics, spin cycle) over the next month. Pay careful attention to the anchors at each end of the scales and circle the number that best represents how you feel. Please answer all items from a) to f).

For me, attending a fitness class (e.g., kickboxing, step aerobics, spin cycle) over the next month is: (Circle best answer)

	1	2	3	4	5	6	7
a)	extremely unenjoyable	quite unenjoyable	slightly unenjoyable		slightly enjoyable	quite enjoyable	extremely enjoyable
b)	extremely painful	quite painful	slightly painful		slightly pleasurable	quite pleasurable	extremely pleasurable
c)	extremely harmful	quite harmful	slightly harmful		slightly beneficial	quite beneficial	extremely beneficial
d)	extremely unimportant	quite unimportant	slightly unimportant		slightly important	quite important	extremely important
e)	extremely boring	quite boring	slightly boring		slightly fun	quite fun	extremely fun
f)	extremely useless	quite useless	slightly useless		slightly useful	quite useful	extremely useful

3. The following questions require you to think about what important people in your life would think about you participating in an organized fitness class (e.g., kickboxing, step aerobics, spin cycle) over the next month. Please circle the number that best represents your beliefs at this time. (Circle best answer)

a) Most people who are important to me think I should participate in a fitness class over the next month.

1	2	3	4	5	6	7
Strongly Agree			Neither Agree nor Disagree			Strongly Disagree

b) Most people who are important to me would encourage me to participate in a fitness class over the next month.

1	2	3	4	5	6	7
Strongly Agree			Neither Agree nor Disagree			Strongly Disagree

c) I think that over the next month, most people who are important to me will themselves attend a fitness class.

1	2	3	4	5	6	7
Strongly Agree			Neither Agree nor Disagree			Strongly Disagree

4. If you were given a free pass to attend a fitness class at the University of Alberta (e.g. kickboxing, step aerobics, spin cycling), would you intend to use it within the next month? (Circle answer)

YES NO

This next set of questions asks you to rate how motivated you are to attend a fitness class over the next month. Pay careful attention to the words and descriptors at the end of each scale and circle the answer that best represents your motivation.

5. a) How motivated are you to attend a fitness class over the next month?

1	2	3	4	5	6	7
Extremely unmotivated	Quite unmotivated	Slightly unmotivated	Neutral	Slightly motivated	Quite motivated	Extremely motivated

b) I strongly intend to do everything I can to attend a fitness class over the next month.

1	2	3	4	5	6	7
Extremely untrue	Quite untrue	Slightly untrue	Neutral	Slightly true	Quite true	Extremely true

c) How committed are you to attending a fitness class over the next month?

1	2	3	4	5	6	7
Extremely uncommitted	Quite uncommitted	Slightly uncommitted	Neutral	Slightly committed	Quite committed	Extremely committed

6. If you were given a free pass to attend a fitness class at the University of Alberta (e.g. kickboxing, step aerobics, spin cycling), do you expect that you would use it within the next month? (Circle answer)

YES NO

7. For the next question exercise is defined as, "leisure-time physical activity (done during free time) performed for at least 20-30 minutes in duration, at a moderate intensity (i.e., slight increase in breathing, light sweating). Some examples of moderate exercises are fast walking, baseball, volleyball, and moderate sports such as badminton and alpine skiing."

How often do you intend to exercise over the next month? _____times

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** As a thank you for completing this questionnaire, there is a pass to attend a free fitness class at the University of Alberta (Drop-in Pass), and a fitness class schedule in the envelope attached to the back of this questionnaire package. Please do not open the envelope until you have been instructed to do so. Thank You!

Fitness and Lifestyle Centre Promotional Study

1. This set of questions asks you to rate how likely you feel it is that you will be able to attend an organized fitness class (e.g., kickboxing, step aerobics, spin cycle) over the next month. Pay careful attention to the words and descriptors at the end of each scale and circle the answer that best represents your feelings.

a) How controllable is it for you to attend a fitness class over the next month?

1	2	3	4	5	6	7
Extremely uncontrollable	Quite uncontrollable	Slightly uncontrollable	Neutral	Slightly controllable	Quite controllable	Extremely controllable

b) How easy or difficult is it for you to attend a fitness class over the next month?

1	2	3	4	5	6	7
Extremely difficult	Quite difficult	Slightly difficult	Neutral	Slightly easy	Quite easy	Extremely easy

c) Do you feel that whether or not you attend a fitness class over the next month is completely up to you?

1	2	3	4	5	6	7
Extremely disagree	Quite disagree	Slightly disagree	Neutral	Slightly agree	Quite agree	Extremely agree

d) How confident are you that you could attend a fitness class over the next month?

1	2	3	4	5	6	7
Extremely unconfident	Quite unconfident	Slightly unconfident	Neutral	Slightly confident	Quite confident	Extremely confident

e) Do you feel you would have complete control over whether or not you attend a fitness class over the next month?

1	2	3	4	5	6	7
Extremely untrue	Quite untrue	Slightly untrue	Neutral	Slightly true	Quite true	Extremely true

f) How certain or uncertain are you that you could attend a fitness class over the next month?

1	2	3	4	5	6	7
Extremely uncertain	Quite uncertain	Slightly uncertain	Neutral	Slightly certain	Quite certain	Extremely certain

2. The following question asks you to rate how you feel about participating in an organized fitness class (e.g., kickboxing, step aerobics, spin cycle) over the next month. Pay careful attention to the anchors at each end of the scales and circle the number that best represents how you feel. Please answer all items from a) to f).

For me, attending a fitness class (e.g., kickboxing, step aerobics, spin cycle) over the next month is: (Circle best answer)

	1	2	3	4	5	6	7
a)	extremely unenjoyable	quite unenjoyable	slightly unenjoyable		slightly enjoyable	quite enjoyable	extremely enjoyable
b)	extremely painful	quite painful	slightly painful		slightly pleasurable	quite pleasurable	extremely pleasurable
c)	extremely harmful	quite harmful	slightly harmful		slightly beneficial	quite beneficial	extremely beneficial
d)	extremely unimportant	quite unimportant	slightly unimportant		slightly important	quite important	extremely important
e)	extremely boring	quite boring	slightly boring		slightly fun	quite fun	extremely fun
f)	extremely useless	quite useless	slightly useless		slightly useful	quite useful	extremely useful

3. The following questions require you to think about what important people in your life would think about you participating in an organized fitness class (e.g., kickboxing, step aerobics, spin cycle) over the next month. Please circle the number that best represents your beliefs at this time. (Circle best answer)

a) Most people who are important to me think I should participate in a fitness class over the next month.

1	2	3	4	5	6	7
Strongly Agree			Neither Agree nor Disagree			Strongly Disagree

b) Most people who are important to me would encourage me to participate in a fitness class over the next month.

1	2	3	4	5	6	7
Strongly Agree			Neither Agree nor Disagree			Strongly Disagree

c) I think that over the next month, most people who are important to me will themselves attend a fitness class.

1	2	3	4	5	6	7
Strongly Agree			Neither Agree nor Disagree			Strongly Disagree

4. Now that you have been given a free pass to attend a fitness class at the University of Alberta (in the attached envelope), do you intend to use it within the next month? (Circle answer)

YES NO

This next set of questions asks you to rate how motivated you are to attend a fitness class over the next month. Pay careful attention to the words and descriptors at the end of each scale and circle the answer that best represents your motivation.

5. a) How motivated are you to attend a fitness class over the next month?

1	2	3	4	5	6	7
Extremely unmotivated	Quite unmotivated	Slightly unmotivated	Neutral	Slightly motivated	Quite motivated	Extremely motivated

b) I strongly intend to do everything I can to attend a fitness class over the next month.

1	2	3	4	5	6	7
Extremely untrue	Quite untrue	Slightly untrue	Neutral	Slightly true	Quite true	Extremely true

c) How committed are you to attending a fitness class over the next month?

1	2	3	4	5	6	7
Extremely uncommitted	Quite uncommitted	Slightly uncommitted	Neutral	Slightly committed	Quite committed	Extremely committed

6. Now that you have been given a free pass to attend a fitness class at the University of Alberta (in the attached envelope), do you expect that you will use it within the next month? (Circle answer)

YES NO

7. For the next question exercise is defined as, "leisure-time physical activity (done during free time) performed for at least 20-30 minutes in duration, at a moderate intensity (i.e., slight increase in breathing, light sweating). Some examples of moderate exercises are fast walking, baseball, volleyball, and moderate sports such as badminton and alpine skiing."

How often do you intend to exercise over the next month? _____times

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Follow-up Questionnaire

1. Within the last 6 weeks, during a typical **7-Day period** (a week), how many times on the average did you do the following kinds of exercise for **more than 15 minutes** during your free time (write on each line the appropriate number).

Times Per Week

a) STRENUOUS EXERCISE
(HEART BEATS RAPIDLY) _____
(e.g., running, jogging, hockey, football, soccer, squash, basketball, cross country skiing, judo, roller skating, vigorous swimming, vigorous long distance bicycling)

b) MODERATE EXERCISE
(NOT EXHAUSTING) _____
(e.g., fast walking, baseball, tennis, easy bicycling, volleyball, badminton, easy swimming, alpine skiing, popular and folk dancing)

c) MILD EXERCISE
(MINIMAL EFFORT) _____
(e.g., yoga, archery, fishing from river bank, bowling, horseshoes, golf, snow-mobiling, easy walking)

2. Within the last 6 weeks, during a typical **7-Day period** (a week), in your leisure time, how often did you engage in any regular activity **long enough to work up a sweat** (heart beats rapidly)?

OFTEN		SOMETIMES		NEVER/RARELY
1	2	3	4	5

3. Have you been regularly attending (i.e. on a weekly basis) fitness classes at the University of Alberta within the last 6 weeks?

YES NO

4. Had you been regularly (i.e. on a weekly basis) attending fitness classes at the University of Alberta prior to receiving your free pass?

YES NO

5. a) Have you used the free fitness pass that was provided to you 6 weeks ago?

YES NO

b) If no, did you give your pass to a friend for them to use?

YES NO

6. Did your intentions to attend a fitness class change once you were given a free pass?

YES NO

7. For the next question exercise is defined as, "leisure-time physical activity (done during free time) performed for at least 20-30 minutes in duration, at a moderate intensity (i.e., slight increase in breathing, light sweating). Some examples of moderate exercises are fast walking, baseball, volleyball, and moderate sports such as badminton and alpine skiing."

How often do you intend to exercise over the next month? _____ times

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1. Is there anything about this study that you wondered about, or that you were suspicious of? (Circle your answer)

Yes No If yes, describe:

2. Do you feel that you were exposed to anything different compared to other people involved in this study? (Circle your answer)

Yes No If yes, describe:

3. Did anything throughout the study influence your intentions to attend a fitness class? (Circle your answer)

Yes No If yes, describe:

4. Upon receiving your free pass did you think that your attendance to a fitness class was going to be monitored? (Circle your answer)

Yes No If yes, describe:

5. Would you have been more likely to use your free pass to attend a fitness class if you knew that your attendance to the class was being monitored? (Circle your answer)

Yes No If yes, describe:

6. During the pre-test, specifically when did you find out that you would be receiving a free pass to attend a fitness class?

Corrective Entreaty

Research studies show that people tend to over-report their intentions to perform physical activity. People tend to have the intention to perform the behaviour, but the behaviour does not always seem to result from intention alone. A correlation is a relationship between 2 variables (e.g. height and weight - the taller you are, the more you tend to weigh). In previous research, correlations between people's intention to be physically active and their actual behaviour have been found to be as low as .22, but are typically found to be between the .3 to .4 range (Courneya & McAuley, 1993). What that means is that even if people have the intention to be physically active, most people are not following through with their intentions. Just because people may have intentions to be physically active, it doesn't mean that they are.

Because you are filling out a questionnaire, and you don't actually have to perform what you say on the questionnaire, you are at risk for what is called *hypothetical bias*. Hypothetical bias occurs when there is a overestimation of a behaviour in a hypothetical situation when compared to a real situation, which means that people tend to report that they can perform a certain behaviour when the situation is hypothetical, but as soon as they are actually placed in the real situation, they no longer do what they said they would do. Hypothetical bias is the difference we continually see in the way people respond in hypothetical situations as compared to real situations – people seem to respond differently when they really don't have to follow through with what they report. Physical activity is often over-reported because it is a socially desirable behaviour. People often like to portray themselves as an exerciser, as opposed to a non-exerciser.

Let me tell you why I think that we continually see this hypothetical bias, why people behave differently when the situation is hypothetical compared to when the situation is real. Physical activity is a socially desirable behaviour, which means that people want to be portrayed as active. Because being physically active is a good thing, people want to be seen as active. Also, because people know that exercise is good for us, they know they should be doing it. But when we are faced with actually having to perform the behaviour, we think a different way. We still would like to be active, but when we are faced with other options, and other things to do, sometimes our initial intention is not enough for us to still perform the behaviour.... this is just my opinion, of course, but it's what I think may be going on with regards to people's intentions to be active.

So, when you are filling out your questionnaire, I ask you to respond exactly how you would respond if you were really going to face the consequences of your response: which is to attend or not attend a fitness class if you were to receive a free pass.

UNIVERSITY OF ALBERTA

INFORMATION LETTER
Fitness and Lifestyle Center Promotion Study

Title: Fitness and Lifestyle Center Promotion Study

Investigator: Jenny Burgess
E-424 Van Vliet Centre, Faculty of Physical Education & Recreation, University of Alberta, Edmonton, Alberta, T6G 2H9, (780) 492-2004
jburgess@ualberta.ca

Dear Participant:

You are being invited to participate in a study that is being done to develop promotional strategies for the Fitness and Lifestyle Centre (FLC) on campus. For this reason, you are being asked to complete a series of questions that will allow us to consider factors that may influence your current health behaviour. You will be asked about your feelings towards attending fitness classes, and also about your current exercise behaviour. The data is being collected for a Master's Thesis, and results from this study may be published in an academic journal.

This questionnaire will take approximately 10 minutes to complete. Your answers will be kept confidential throughout this process. The last 5 digits of your student identification number will be used only to match the questionnaires that you fill out today, with the questionnaires that you will be asked to fill out 6 weeks from now. The session 6 weeks from now will take approximately 10 minutes to complete. To ensure confidentiality, personal information will be stored in a locked filing cabinet in the Van Vliet Centre to which only the investigators have access. Normally, information is retained for a period of five years post publication, after which it will be destroyed.

We believe that the benefits of participating in this research are multiple. First, completing the questionnaire may remind you to think about your health behaviour. Second, your responses will provide us with information that may be helpful in developing promotional strategies for the FLC. Third, your information is important to health psychology researchers who are attempting to gain a better understanding of patterns and predictors of health behaviour. This information is often used in public health promotion messaging. Given the instrumentation used to collect the information in this study (i.e., surveys), the risks associated with participation revolve around the disclosure of personal or sensitive information. This may make some participants uncomfortable.

Filling out this questionnaire is optional, and you can decline to answer any question. If you decline to continue or withdrawal from the study, please speak with the investigator who is administering your questionnaire and your information will be removed from the

study. If you choose to withdrawal upon completion of your commitment, please contact one of the investigators listed above.

If you have any questions about this study, you can contact the researcher listed above. Alternatively, if you wish to speak with someone who is not involved with this study, please call Dr. Brian Maraj, Chair of Faculty Ethics Committee, at 780-492-5910.

Thank you for your involvement in our research project.

Jenny Burgess

UNIVERSITY OF ALBERTA

Debrief

Now that you are finished, we would like to tell you more about what we've done here. A number of studies have recently been completed looking at the relationship between people's intentions and their behaviour. Researchers are interested in why people's intentions don't very often match their behaviour, especially in health behaviours such as exercise, condom use, and healthy eating. People often have an intention to perform a behaviour, but do not always follow through with their behaviour. Part of the scientific process involves building on previous research in order to attempt to clarify issues and lead to new discoveries. This study helps us to better understand the relationship between intentions and behaviour in a physical activity setting, and we hope to use this information to do better physical activity research.

In this study there were 3 groups. One group was told that they would be receiving the free fitness pass before filling out the questionnaires (Group #1), and 2 groups received the free fitness pass after filling out the questionnaires (Group #2 and #3). The difference between groups 2 and 3, was that group 3 read a script called a corrective entreaty. A corrective entreaty asks participants to be honest about their intentions. Participants were asked to respond as if they would really be following through with their intentions and to be realistic when forming their intentions.

The corrective entreaty is used specifically in hypothetical situations to eliminate hypothetical bias. Hypothetical bias is when people overestimate their intention in a hypothetical situation compared to a real situation. This is often the case with socially desirable behaviours, such as physical activity. What this means is that people have the intention to perform a behaviour when the situation is "hypothetical", but when the situation is "real", their intention to perform the behaviour changes. We were interested in seeing whether we were able to match the intentions of people who received the corrective entreaty (i.e., Group #3) to the intentions of people who received the free fitness pass before filling out the questionnaires (i.e., Group #1). The corrective entreaty has been used in voting situations, which asked people to be realistic about their voting intentions, but has never been used in a physical activity setting before.

By having groups 2 and 3 differ only with respect to whether or not they received the corrective entreaty, we will be able to determine if the corrective entreaty was effective in changing people's intentions. All parts of the study were the same for these 2 groups, except whether or not they received the corrective entreaty. A single difference between groups 1 and 2 was when participants discovered that they would be receiving the free fitness pass. Participants in group 1 were told that they would be receiving the pass before filling out the questionnaires, while participants in group 2 were told after filling out the questionnaires. By delivering the free fitness pass at different times, we will be able to determine if the timing influenced people's intentions in any way.

There was one purpose of this study: to determine whether the intentions of people who receive a free pass to attend a fitness class more closely match their behaviour if they are administered a corrective entreaty, than if they are not. So our **independent variable,** that is

the variable that we manipulate or change, was whether or not you received a corrective entreaty of not. We will determine if people's intentions matched their behaviour and then compare the difference between participants who received the corrective entreaty to those who did not. Our **dependent variable** was your attendance to a fitness class. So, we're interested in how our independent variable, a corrective entreaty, and our dependent variable, fitness class attendance, relate to each other.

One of the last things that I want to discuss with you is why, in the beginning, I didn't explain exactly what our hypotheses were. I guess you can see if I told you that we were monitoring whether or not you used your free pass, you might have felt pressured to react in the way you thought we expected you to on the basis of our theory rather than reacting the way you normally would. The possibility that some participants might react to independent variable manipulations based on what they believe the experimenters expect is called the DEMAND AWARENESS EFFECT. This can be a problem in research because our results could reflect nothing having to do with the psychological processes that we're interested in studying, but could simply reflect DEMAND AWARENESS. If this was the case, scientific progress would be slowed and inappropriate avenues of research could be followed. So, I hope you can see how having people know our hypotheses before responding, would lead to problems in the interpretation of our data. So I'm sorry I didn't tell you everything ahead of time, but I guess that you can see that if I told you exactly what we were looking at, you might have answered a little differently. If you have any questions you can contact me via email at jburgess@ualberta.ca, or via telephone at 492-2004.